

6374574

REPORT NUMBER 301L-GTL-04-002

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 301L FUEL SYSTEM INTEGRITY

GENERAL MOTORS CORP.
2004 CHEVROLET EXPRESS, MPV
NHTSA NO. C40111

GENERAL TESTING LABORATORIES, INC.
1623 LEEDSTOWN ROAD
COLONIAL BEACH, VIRGINIA 22443



OCTOBER 4, 2004

FINAL REPORT

PREPARED FOR

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 6115 (NVS-220)
WASHINGTON, D.C. 20590

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Approval Date: 10/04/04

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SECTION 1

PURPOSE OF COMPLIANCE TEST

1.0 PURPOSE OF COMPLIANCE TEST

A 2004 Chevrolet Express MPV was subjected to Federal Motor Vehicle Safety Standard (FMVSS) No. 301 testing to determine if the vehicle was in compliance with the requirements of the standard. The purpose of this standard is to reduce deaths and injuries occurring from fires that result from fuel spillage during and after motor vehicle crashes, and resulting from ingestion of fuels during siphoning.

1.1 The test vehicle was a 2004 Chevrolet Express MPV. Nomenclature applicable to the test vehicle are:

A. Vehicle Identification Number: 1GNFG15XX41117979

B. NHTSA No.: C40111

C. Manufacturer: GENERAL MOTORS CORP.

D. Manufacture Date: 08/03

1.2 TEST DATE

The test vehicle was subjected to FMVSS No. 301 testing on September 17, 2004.

SECTION 2

COMPLIANCE TEST RESULTS SUMMARY

2.0 TEST RESULTS

All tests were conducted in accordance with NHTSA, Office of Vehicle Safety Compliance (OVSC) Laboratory Procedure, TP-301-02 dated 8 November 1994 and General Testing Laboratories, Inc. (GTL) Test Procedure, TP-301-02, "Fuel System Integrity".

Based on the test performed, the 2004 Chevrolet Express MPV appears to meet the lateral impact requirements of FMVSS 301 testing.

SECTION 3

COMPLIANCE TEST DATA

3.0 TEST RESULTS

The following data sheets document the results of testing on the 2004 Chevrolet Express.

SUMMARY OF RESULTS

Vehicle's NHTSA No.: C40111 Test Model: EXPRESSTest Date.: 09/17/04 Time: 13:10 Temperature 77 ° F

Vehicle Model Year, Make, Model and Body Style:

2004 CHEVROLET EXPRESS MPVVehicle Test Weight: 5925 lbs.; Impact Velocity: 19.7 mph

Type of Front Occupant Restraint System Installed in Test Vehicle:

Driver's DSP: TYPE 2 BELT WITH FRONTAL AIR BAG IN STEERING WHEELRight Passenger's DSP: TYPE 2 BELT WITH FRONTAL AIR BAG IN DASHStoddard solvent spillage from Vehicle's Fuel System: None

REMARKS:

RECORDED BY: DATE: 09/17/04APPROVED BY: 

DATA SHEET 1
TEST VEHICLE SPECIFICATIONS

TEST VEHICLE INFORMATION:

NHTSA No.: C40111
Year/Make/Model/Body Style: 2004 CHEVROLET EXPRESS
Engine Data: 4.3 LITER V6
Transmission Data: 4 SPEED AUTOMATIC
Final Drive Data: N/A
Major Options: EIGHT SEAT OPTION
Date Received: 06/04/04; Odometer Reading: 1141 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: GENERAL MOTORS CORP.
Date of Manufacture: 08/03
VIN: 1GNFG15XX41117979

GVWR: 3266 kg (7200 lbs.); GAWR Front: 1633 kg (3600 lbs.) GAWR Rear: 1814 kg (4000 lbs.)

DATA FROM VEHICLE'S TIRE PLACARD:

Location of Placard on Vehicle: DRIVER'S SIDE DOOR
Tire Pressure With Maximum Capacity Vehicle Load —
Front: 35 psi; Rear: 38 psi
Recommended Tire Size: P235/75R16XL
Recommended Cold Tire Pressure: Front = 240 kPa (35 psi) Rear = 260 kPa (38 psi)
Size of Tires on Test Vehicle: P235/75R16
Type of Spare Tire: FULL SIZE

Vehicle Capacity Data —

Type of Front Seat(s): BUCKET
Number of Occupants: Front = 2; Mid = 3 Rear = 3; Total = 8

A. VEHICLE CAPACITY WEIGHT (VCW) =	<u>1895</u> lbs.
B. Number of Occupants x 150 lbs. =	<u>1200</u> lbs.
RATED CARGO AND LUGGAGE WEIGHT (RCLW) = A - B =	<u>695</u> lbs.

RECORDED BY: DATE: 09/16/04APPROVED BY: 

DATA SHEET 2 PRE-TEST DATA

WEIGHT OF TEST VEHICLE:

A. As Received At Laboratory (Maximum Fluids) —

Right Front = 651 kg (1436 lbs.) Right Rear = 567 kg (1250 lbs.)

Left Front = 620 kg (1367 lbs.) Left Rear = 568 kg (1252 lbs.)

TOTAL FRONT = 1271 kg (2803 lbs.) TOTAL REAR = 1135 kg (2502 lbs.)

% of TOTAL = 52.8 % % of TOTAL = 47.2 %

TOTAL DELIVERED WEIGHT = 2406 kg (5305 lbs.)

B. Calculation of Target Test Weight —

1. Total Delivered Weight = 2406 kg (5305 lbs.)

2. Rated Cargo & Lugg. Weight (RCLW) = 136 kg (300 lbs.)

3. Weight of 2 Dummies (164 lbs. each) = 149 kg (328 lbs.)

TARGET TEST WEIGHT = 1 + 2 + 3 = 2691 kg (5933 lbs.)

C. Vehicle, Dummies and 136 kg (300 lbs.) of Cargo Weight —

Right Front = 697 kg (1537 lbs) Right Rear = 633 kg (1396 lbs)

Left Front = 706 kg (1557 lbs) Left Rear = 651 kg (1435 lbs)

TOTAL FRONT = 1403 kg (3094 lbs) TOTAL REAR = 1284 kg (2831 lbs)

% of TOTAL = 52 % % of TOTAL = 48 %

TOTAL TEST WEIGHT = 2688 kg (5925 lbs)

Weight of Ballast secured in cargo area = 150 kg (330 lbs)

Type of Ballast: SALT BAGS

Method of Securing Ballast: VEHICLE SEAT BELTS

Vehicle Components Removed for Weight Reduction:

NONE

DATA SHEET 2
PRE-TEST DATA CONTINUED

TEST VEHICLE ATTITUDE:

As Delivered — Right Front: 851 mm (33.5 inches)
 Left Front: 857 mm (33.75 inches)
 Right Rear: 892 mm (35.125 inches)
 Left Rear: 895 mm (35.25 inches)

As Tested — Right Front: 838 mm (33.0 inches)
 Left Front: 838 mm (33.0 inches)
 Right Rear: 879 mm (34.6 inches)
 Left Rear: 876 mm (34.5 inches)

Vehicle's Wheelbase = 3429 mm (135 inches)

FUEL SYSTEM DATA:

Fuel System Capacity Listed in Owner's Manual = 117 liters (31 gallons)
Usable Capacity Figure Furnished By COTR = 117 liters (31.01 gallons)

Test Volume Range (91 to 94% of Usable Capacity) —

107 liters (28.22 gallons) TO 110 liters (29.15 gallons)

ACTUAL TEST VOLUME = 109 liters (28.7 gallons) (with entire fuel system filled)

Test Fluid Type: Stoddard solvent
Test Fluid Specific Gravity: .7583
Test Fluid Kinematic Viscosity: 1.7 centistokes at 77° F
Test Fluid Color: BLUE ("red" is preferred)
Type of Vehicle Fuel Pump: ELECTRIC
Electric Fuel Pump Operation with Ignition Switch ON and Engine OFF —
YES

Details of Fuel System: HIGH PRESSURE ELECTRIC FUEL PUMP
SUPPLY TO FUEL INJECTORS WITH LOW PRESSURE RETURN LINE
TO FUEL TANK.

REMARKS:

RECORDED BY: *S. L. Aranda*

DATE: 09/16/04

APPROVED BY: *D. Menick*

DATA SHEET 3
POST IMPACT DATA

TYPE OF TEST: 301L
TEST DATE: 09/17/04; TIME: 13:10; TEMP.: 77 °F
VEH. NHTSA NO.: C40111; VIN: 1GNFG15XX41117979

REQUIRED IMPACT VELOCITY RANGE: 18.9 to 19.9 mph

ACTUAL IMPACT VELOCITY: (speed traps located within 5 feet of impact plane)

Trap No. 1 = 19.7 mph

Trap No. 2 = 19.6 mph

Average Impact Speed = 19.7 mph

REMARKS:

RECORDED BY: 

DATE: 09/17/04

APPROVED BY: 

DATA SHEET 4
SUMMARY OF FMVSS 301 DATA

TEST VEHICLE NHTSA NO.: C40111 ;

TEST DATE: 09/17/04

VEHICLE YEAR/MAKE/MODEL/BODY STYLE:
2004 CHEVROLET EXPRESS

TYPE OF IMPACT: 301L

STODDARD SOLVENT SPILLAGE MEASUREMENT:

A. From impact until vehicle motion ceases —

Actual = 0 oz. Maximum Allowable = 1 ounce

B. For 5 minute period after vehicle motion ceases —

Actual = 0 oz. Maximum Allowable = 5 ounces

C. For next 25 minutes —

Actual = 0 oz. Maximum Allowable = 1 oz./minute

D. Provide Spillage Details: NONE

REMARKS:

RECORDED BY: *[Signature]*

DATE: 09/17/04

APPROVED BY: *[Signature]*

DATA SHEET 5
STATIC ROLLOVER TEST DATA:

A. Test Phase = 0° to 90°

Determination of Stoddard Solvent
Collection Time Period:

1. Rollover Fixture 90° Rotation Time = 1
minutes, 35 seconds

(Specified Range is 1 to 3
minutes)

2. FMVSS 301 Position Hold
Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 35 seconds

4. NEXT WHOLE MINUTE INTERVAL =
7 minutes

Actual Test Vehicle Stoddard Solvent
Spillage:

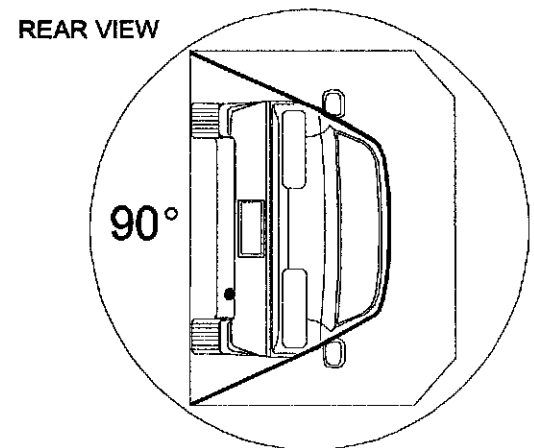
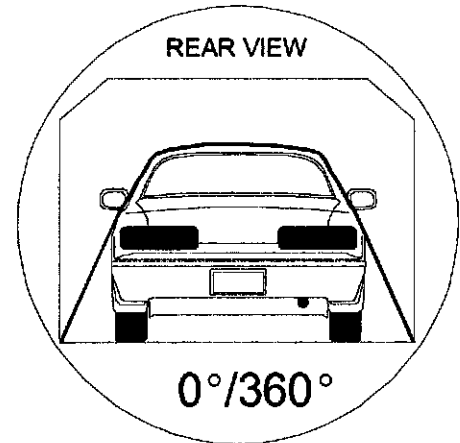
1. First 5 minutes from onset of
rotation = 0 oz.
(5 oz. allowed)

2. 6th minute = 0 oz.
(1 oz. allowed)

3. 7th minute = 0 oz.
(1 oz. allowed)

4. 8th minute (if required) = N/A oz. (1 oz. allowed)

Provide Details of Stoddard Solvent Spillage Locations — NONE



DATA SHEET 5 CONTINUED

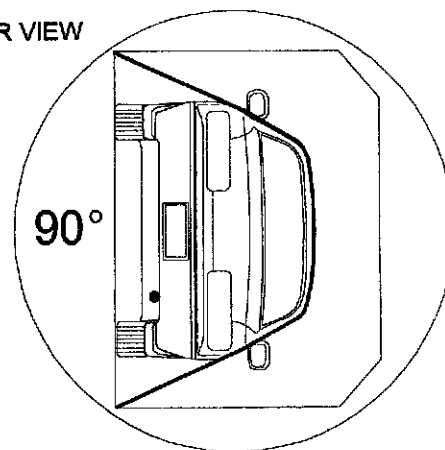
B. Test Phase = 90° to 180°

Determination of Stoddard
Solvent Collection Time Period:

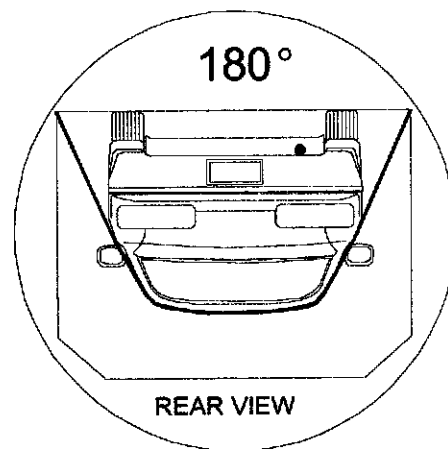
1. Rollover Fixture 90°

Rotation Time = 1 minutes,
28 seconds(Specified Range is 1 to 3
minutes)2. FMVSS 301 Position Hold
Time = 5 minutes, 0 seconds3. TOTAL = 6 minutes, 28 seconds4. NEXT WHOLE MINUTE INTERVAL =
7 minutesActual Test Vehicle Stoddard
Solvent Spillage:1. First 5 minutes from onset of
rotation = 0 oz.
(5 oz. allowed)2. 6th minute = 0 oz.
(1 oz. allowed)3. 7th minute = 0 oz.
(1 oz. allowed)4. 8th minute (if required) = N/A oz. (1 oz. allowed)Provide Details of Stoddard Solvent Spillage Locations — NONE

REAR VIEW

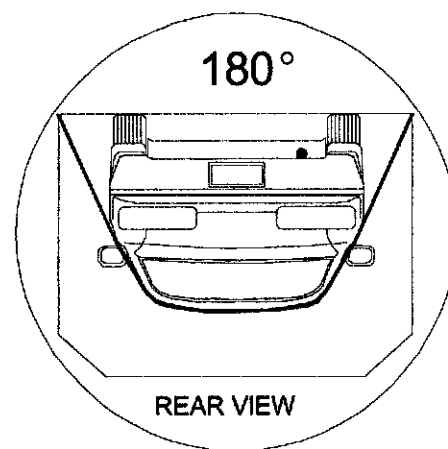


180°

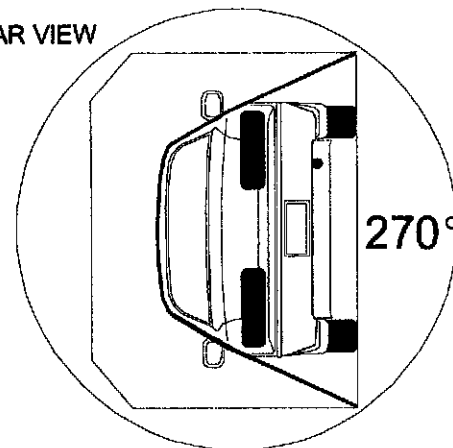


DATA SHEET 5 CONTINUED

C. Test Phase = 180° to 270°

Determination of Stoddard
Solvent Collection Time Period:1. Rollover Fixture 90°
Rotation Time = 1 minutes,
27 seconds(Specified Range is 1 to 3
minutes)2. FMVSS 301 Position Hold
Time = 5 minutes, 0 seconds3. TOTAL = 6 minutes, 27 seconds4. NEXT WHOLE MINUTE
INTERVAL = 7 minutesActual Test Vehicle Stoddard
Solvent Spillage:1. First 5 minutes from onset of
rotation = 0 oz.
(5 oz. allowed)2. 6th minute = 0 oz.
(1 oz. allowed)3. 7th minute = 0 oz.
(1 oz. allowed)4. 8th minute (if required) = N/A oz. (1 oz. allowed)Provide Details of Stoddard Solvent Spillage Locations — NONE

REAR VIEW

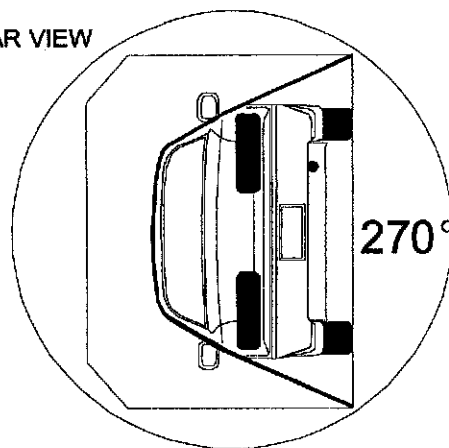


DATA SHEET 5 CONTINUED

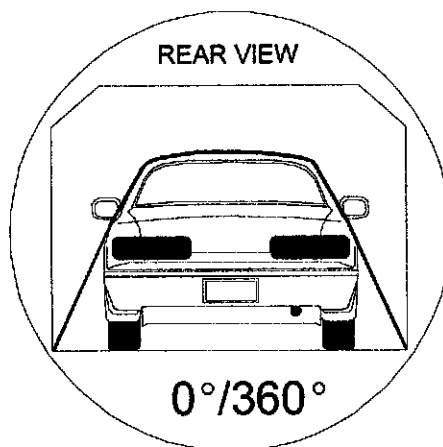
D. Test Phase = 270° to 360°

Determination of Stoddard
Solvent Collection Time Period:1. Rollover Fixture 90°
Rotation Time = 1 minutes,
47 seconds(Specified Range is 1 to 3
minutes)2. FMVSS 301 Position Hold
Time = 5 minutes, 0 seconds3. TOTAL = 6 minutes, 47 seconds4. NEXT WHOLE MINUTE INTERVAL =
7 minutesActual Test Vehicle Stoddard
Solvent Spillage:1. First 5 minutes from onset of
rotation = 0 oz.
(5 oz. allowed)2. 6th minute = 0 oz.
(1 oz. allowed)3. 7th minute = 0 oz.
(1 oz. allowed)4. 8th minute (if required) = N/A oz. (1 oz. allowed)Provide Details of Stoddard Solvent Spillage Locations — NONE

REAR VIEW



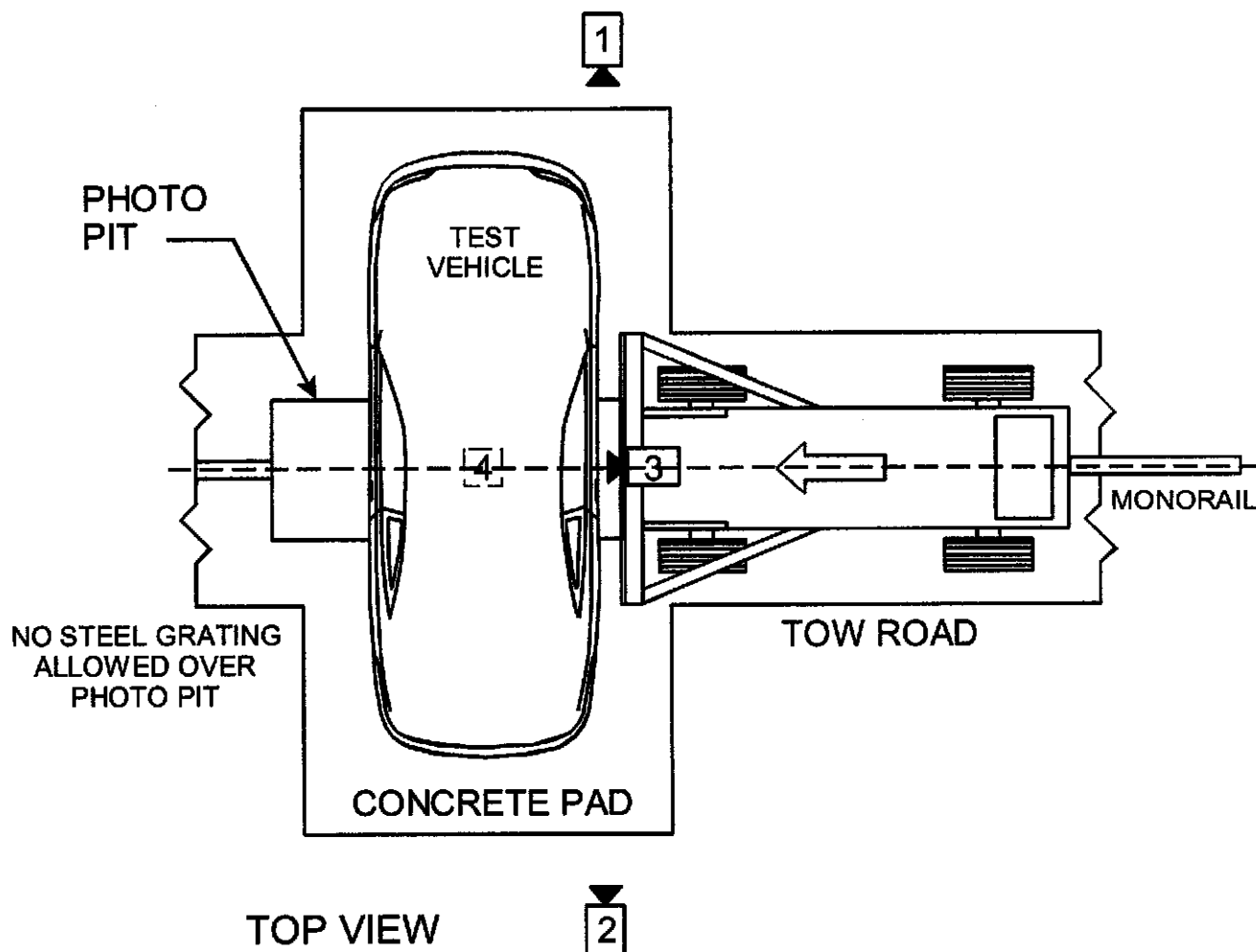
REAR VIEW



DATA SHEET 6
CAMERA LOCATION

VEHICLE NHTSA NO.: C40111

TEST DATE: 09/17/04



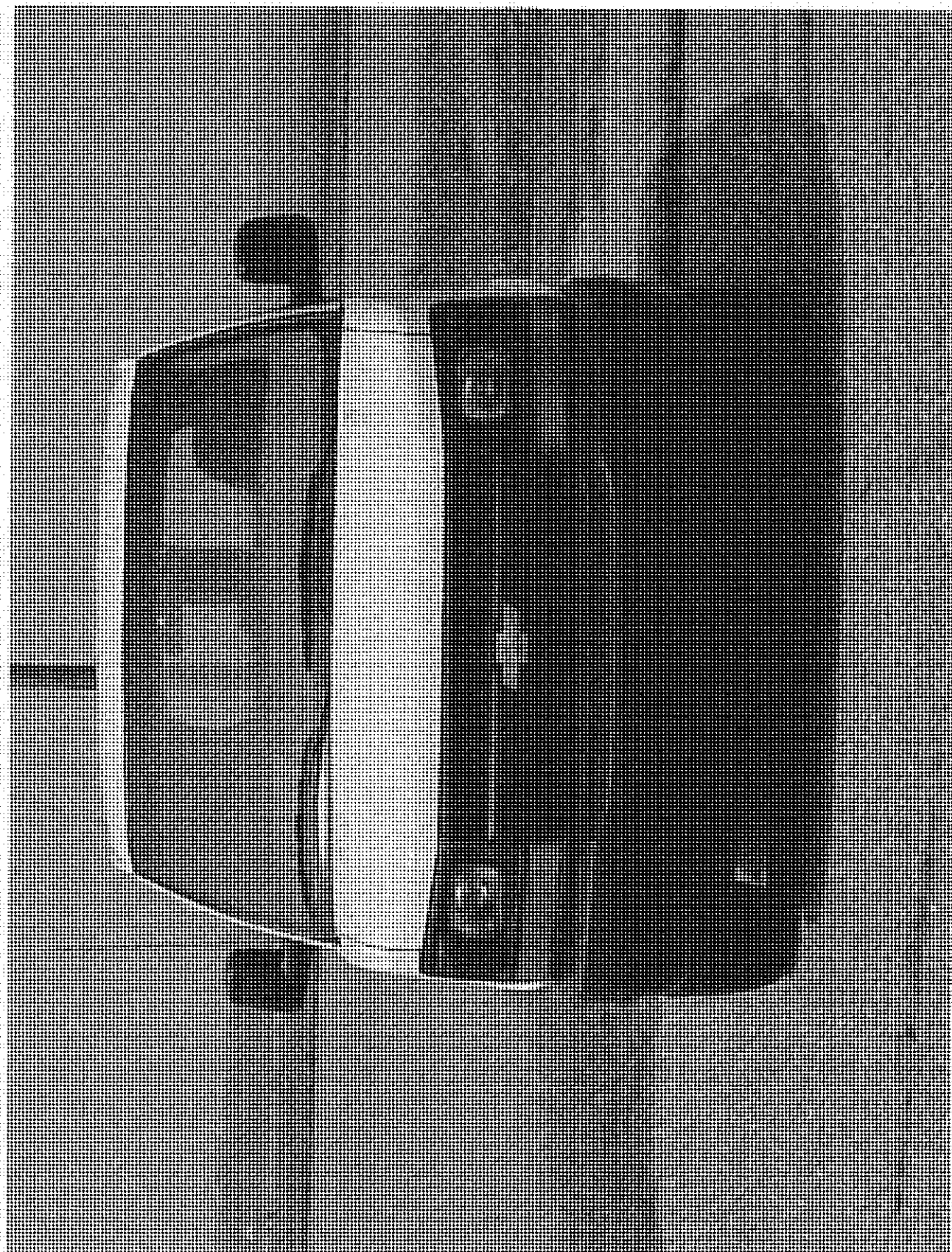
- CAMERA 1 – REAR SIDE VIEW OF VEHICLE DURING CRASH
CAMERA 2 – FRONT SIDE VIEW OF VEHICLE DURING CRASH
CAMERA 3 – OVERHEAD VIEW OF ENTIRE IMPACT
CAMERA 4 – UNDERBODY VIEW OF FUEL TANK LOCATED IN PIT

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

TABLE 1 - INSTRUMENTATION & EQUIPMENT LIST

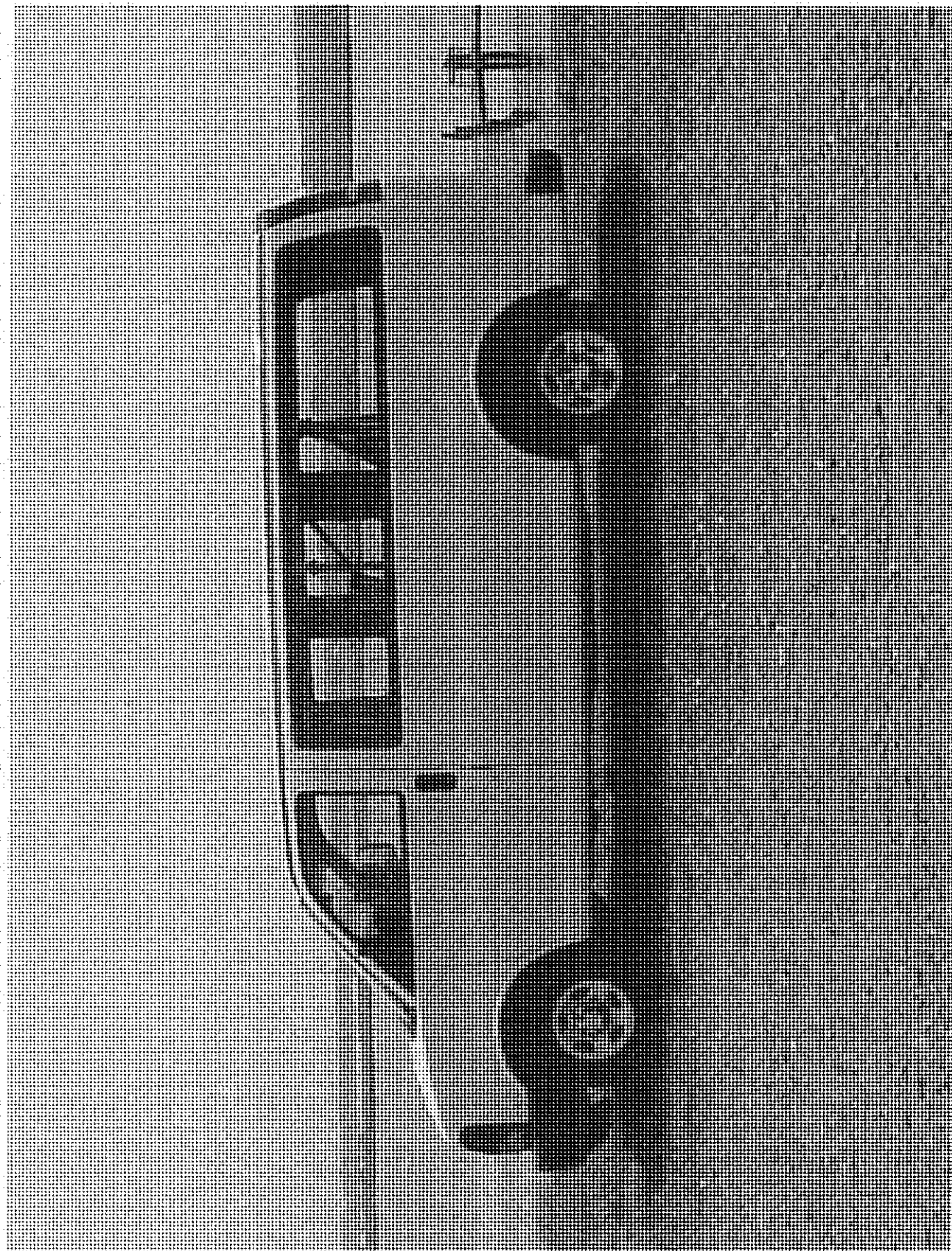
EQUIPMENT	DESCRIPTION	MODEL/ SERIAL NO.	CAL. DATE	NEXT CAL. DATE
COUNTER/TIMER	RACAL-DANA	994343	07/04	07/05
COUNTER/TIMER	SYSTRON DONNER	19 353- 116	07/04	07/05
SPEED TRAP 2	GTL ST1	N/A	09/04	09/05
SPEED TRAP 3	GTL ST2	N/A	09/04	09/05
STOP WATCH	ACCUSPLIT	ACT 1 A&B	07/04	07/05
STOP WATCH	ACCUSPLIT	ACT 2 A&B	07/04	07/05
SCALES	INTERCOMP	199744	07/04	07/05
TIRE PRESSURE GAUGE	WEKSLER	0-100	02/04	02/05
STEEL SCALES	STARRETT	C416R	02/04	02/05
STEEL TAPE	STANLEY	GF2	02/04	02/05
LEVEL	STANLEY	42-449	02/04	02/05
TEMP. INDICATOR	OMEGA	B/5562/14/1	03/04	03/05
TEMP. RECORDER	OMEGA	B/5562/14/1	03/04	03/05

SECTION 5
PHOTOGRAPHS



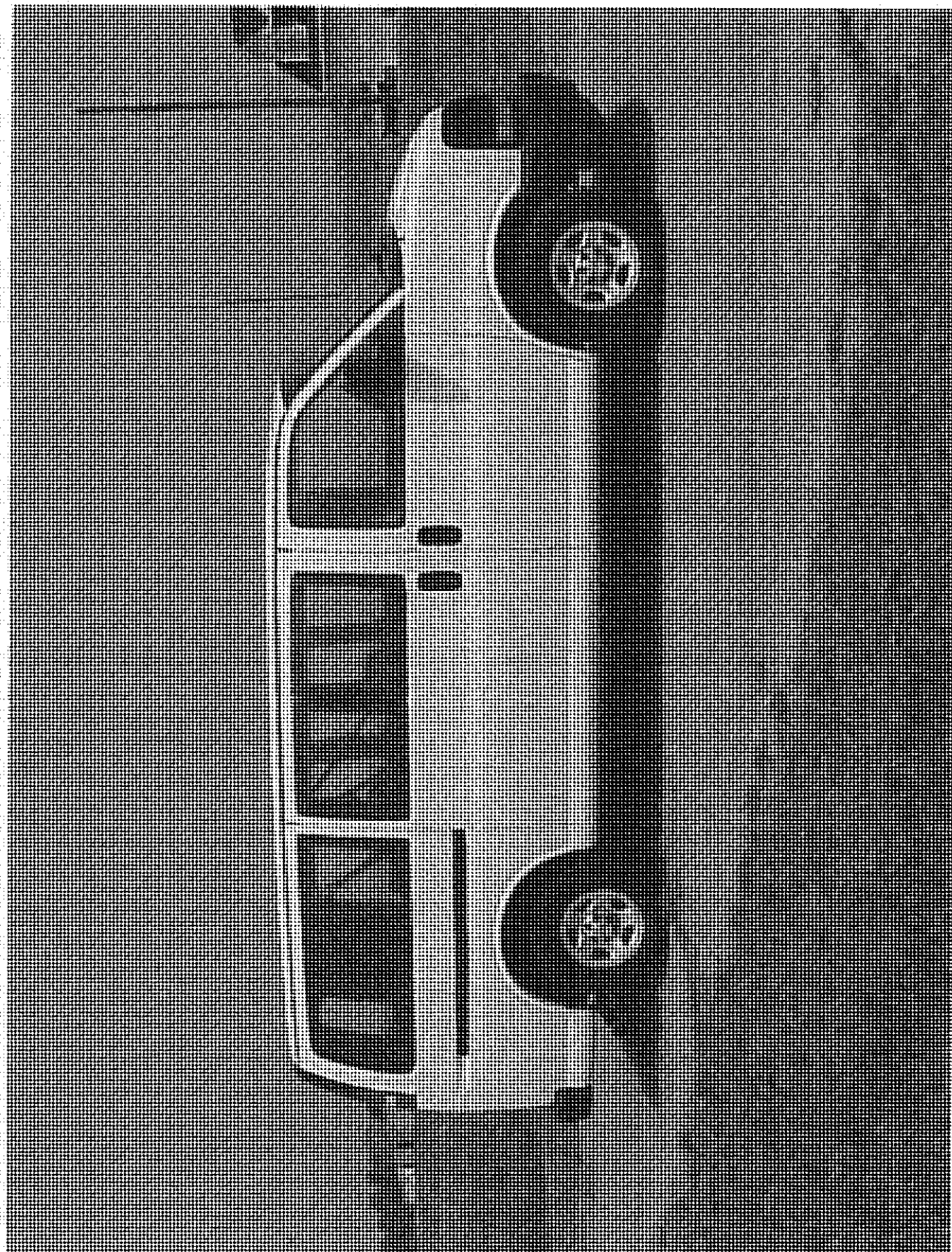
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.1
FRONT VIEW OF VEHICLE PRE-TEST



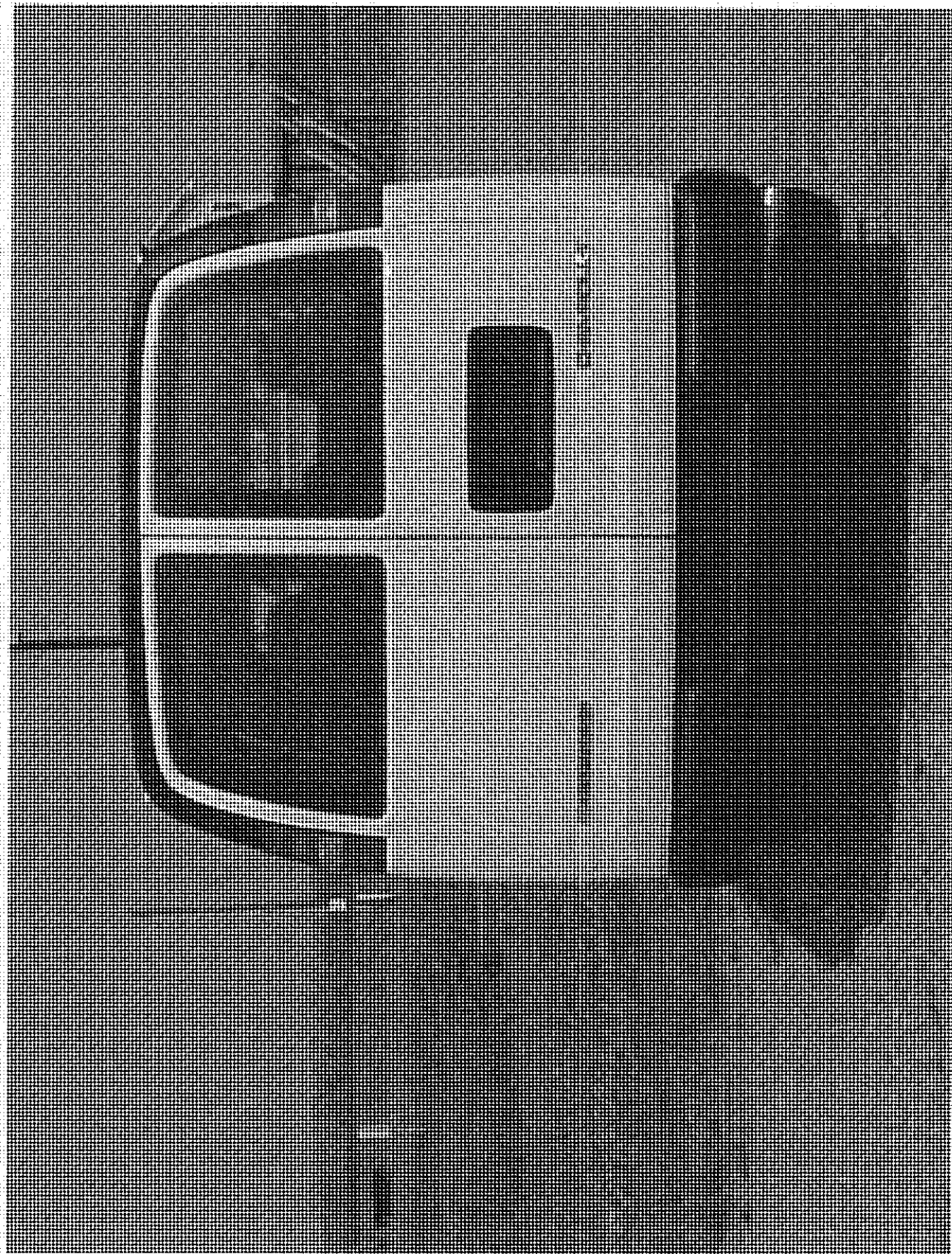
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.2
LEFT SIDE VIEW OF VEHICLE PRE-TEST



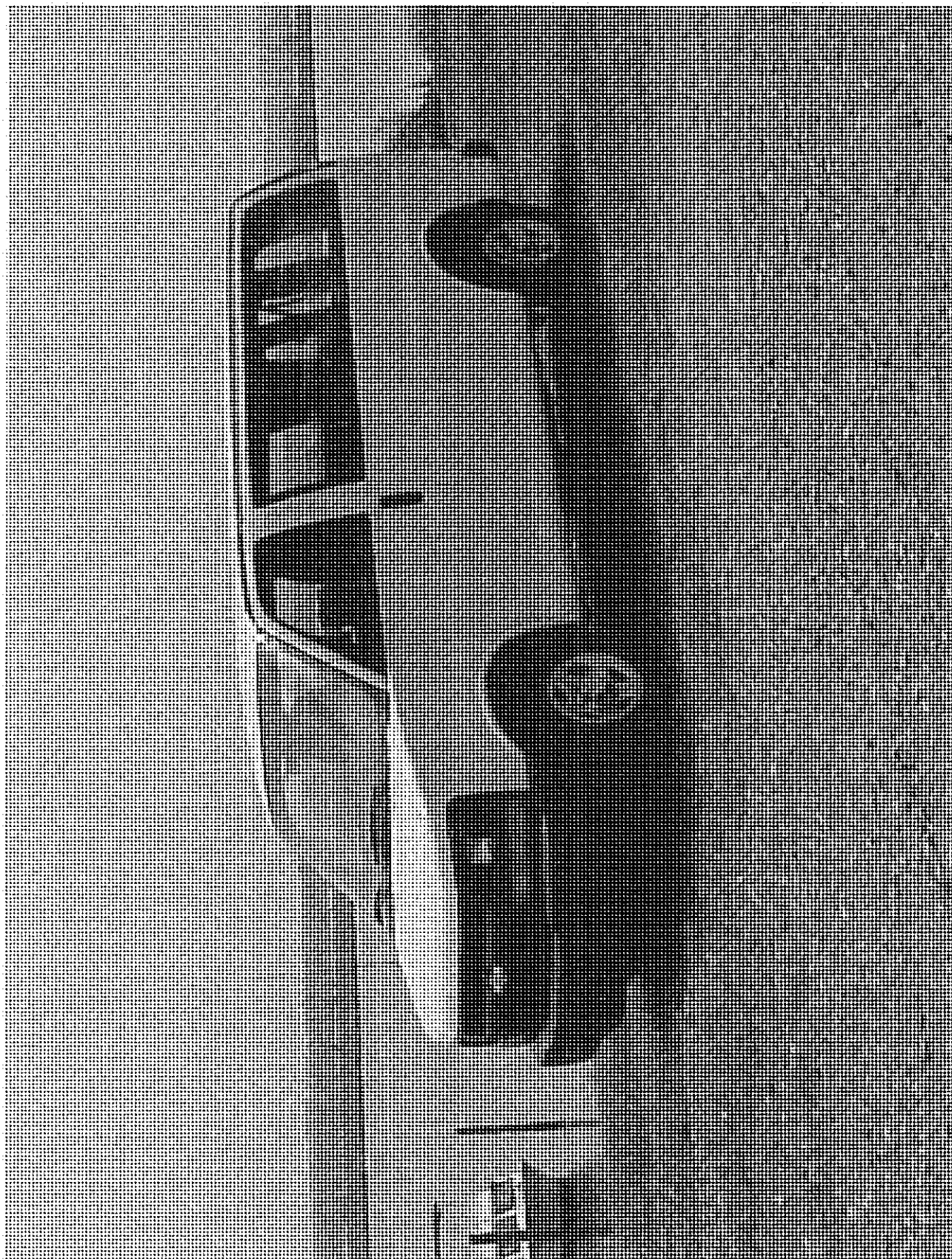
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.3
RIGHT SIDE VIEW OF VEHICLE PRE-TEST



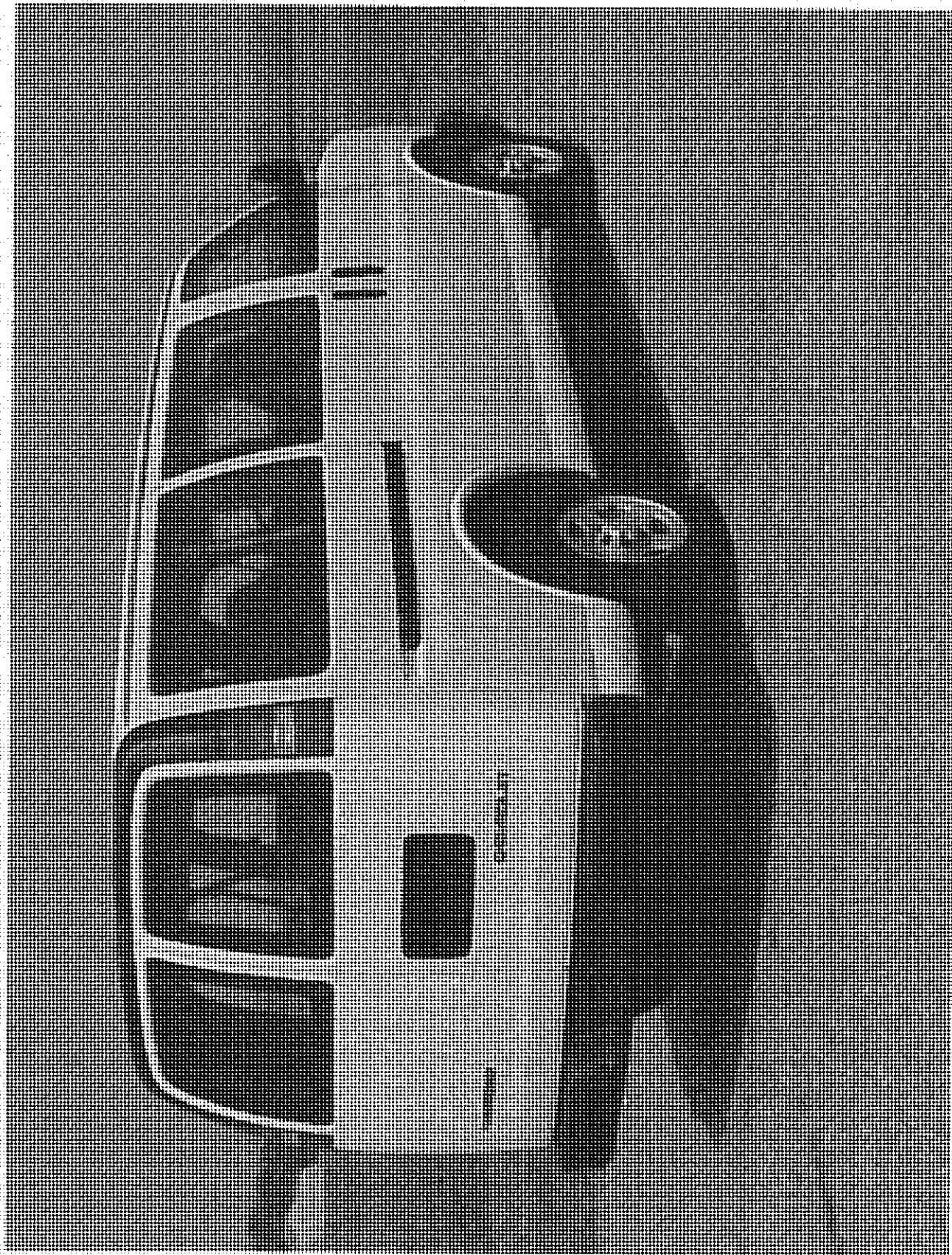
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.4
REAR VIEW OF VEHICLE PRE-TEST



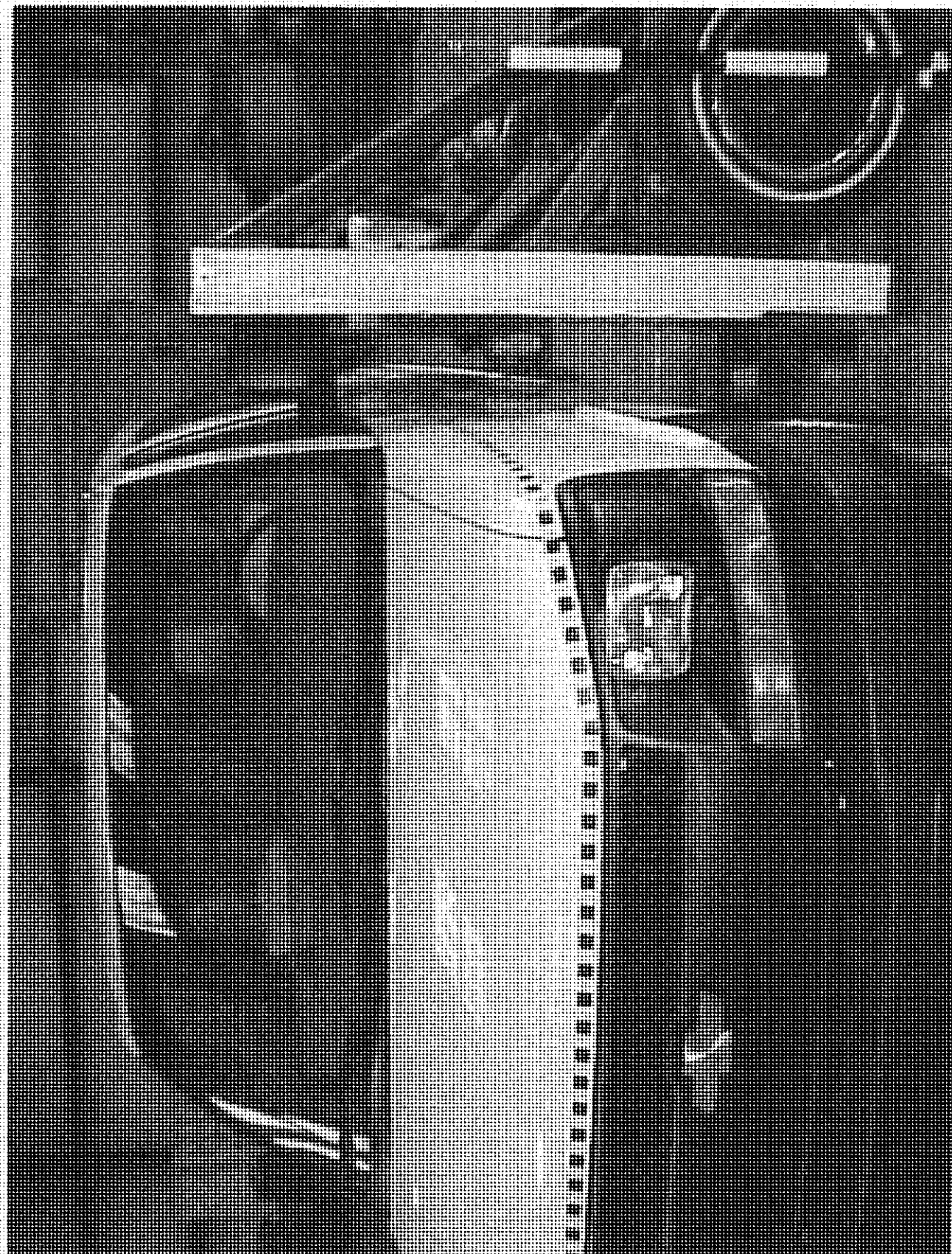
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.5
¾ FRONTAL VIEW FROM LEFT SIDE OF
VEHICLE PRE-TEST



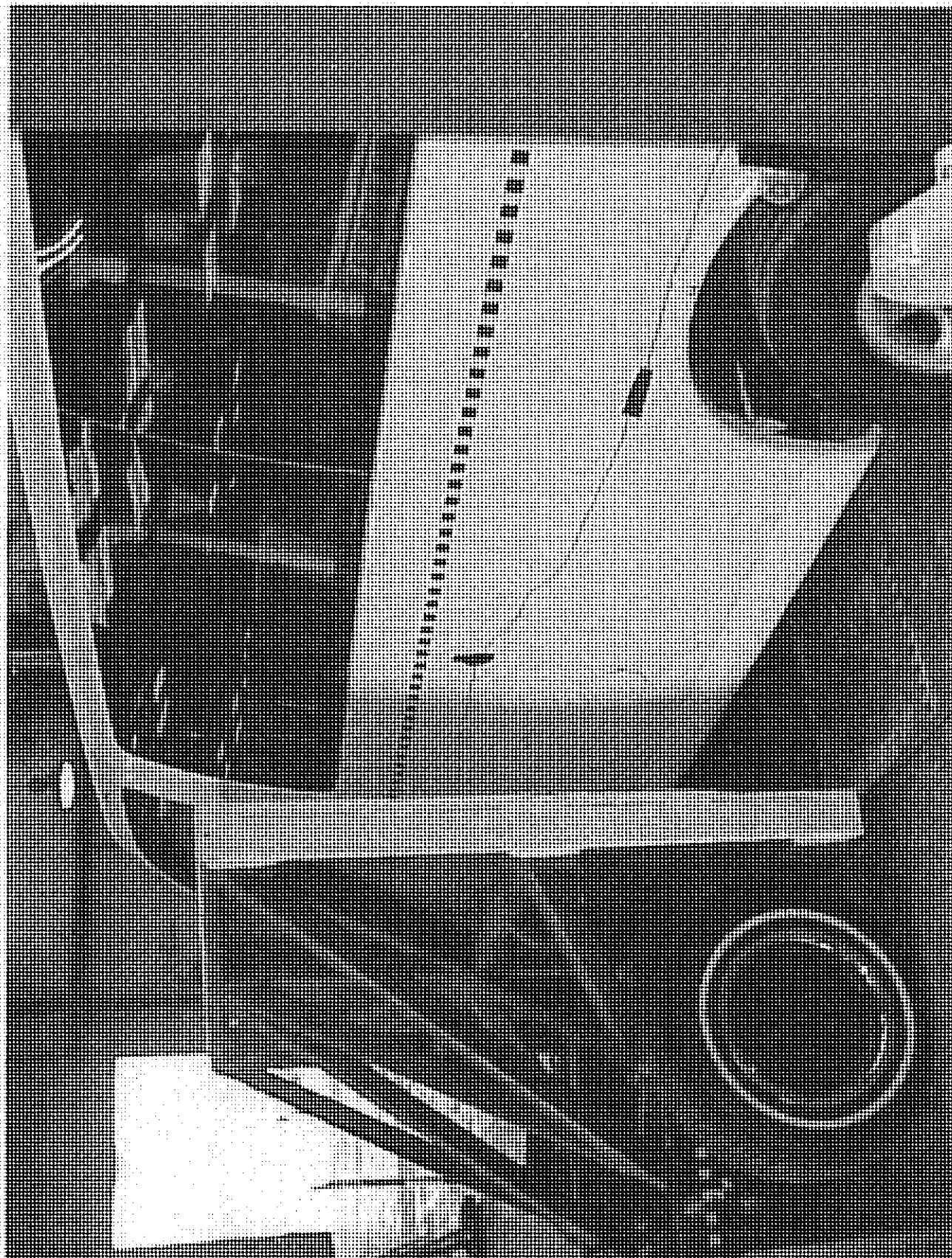
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NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.6
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE
PRE-TEST



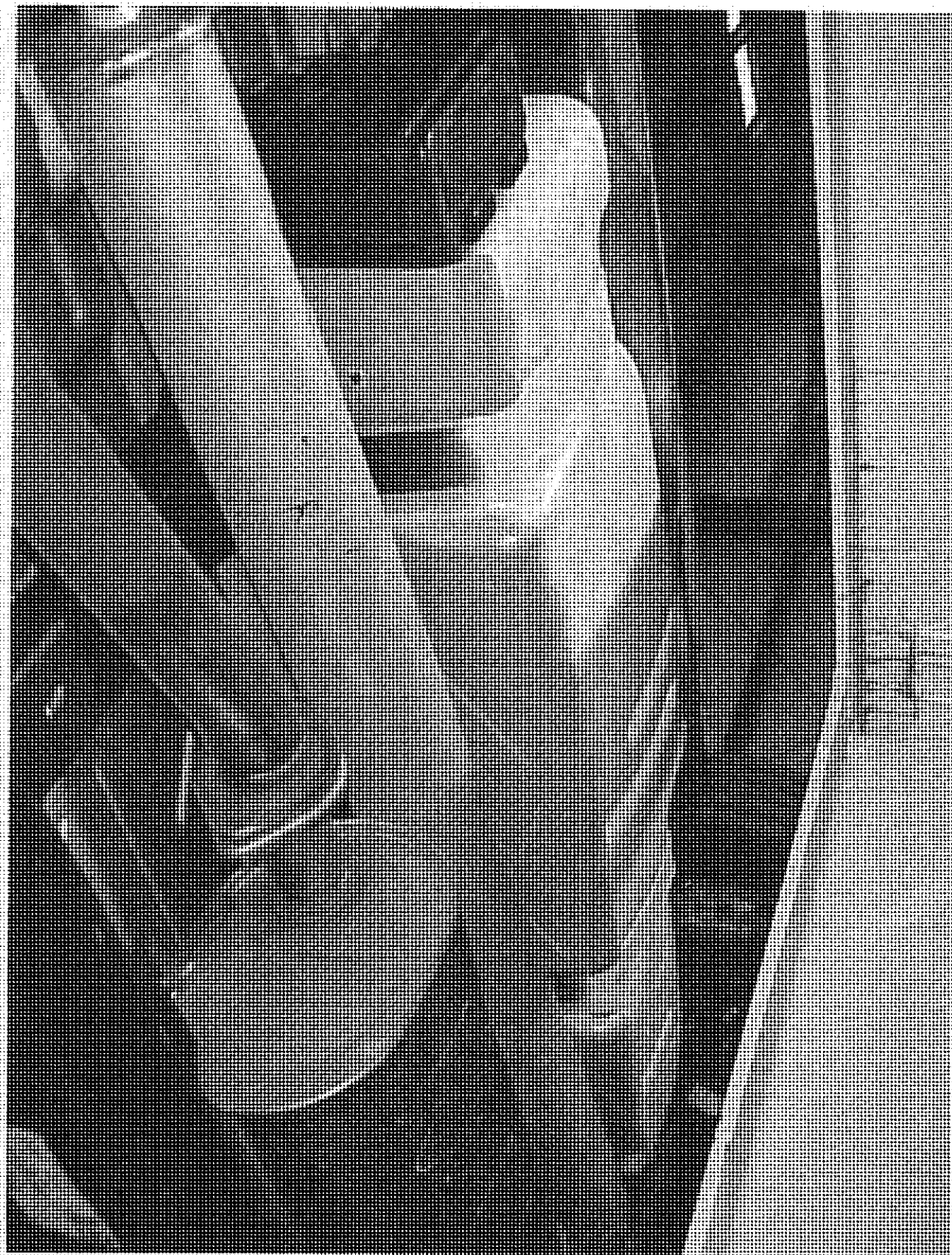
2004 CHEVROLET EXPRESS
NH-TSA NO. C40111
FMVSS NO. 301L

FIGURE 5.7
LEFT VIEW OF VEHICLE/BARRIER PRE-TEST



2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.8
RIGHT VIEW OF VEHICLE/BARRIER PRE-TEST



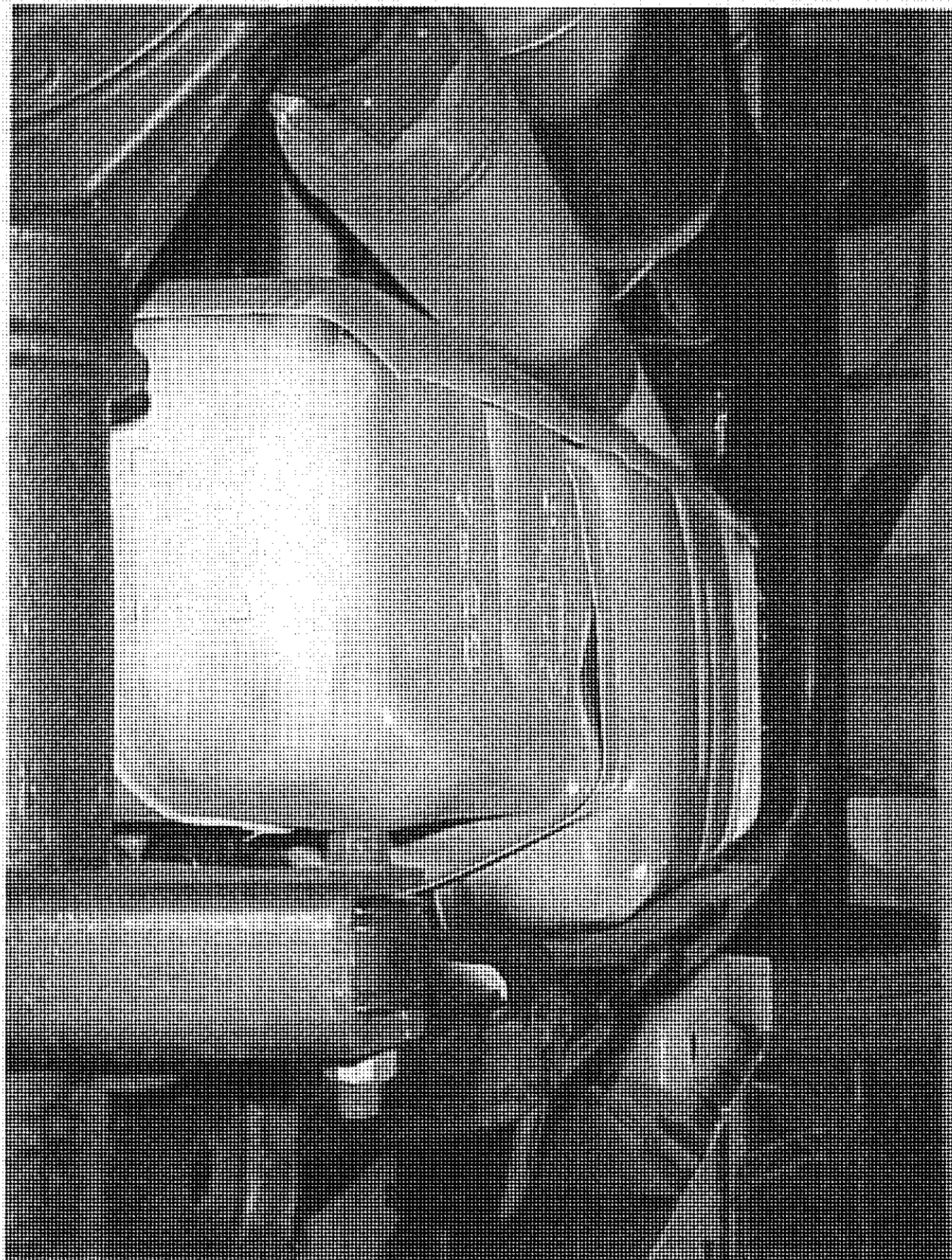
2004 CHEVROLET EXPRESS
NHTSA NO. C-60111
FMVSS NO. 301L

FIGURE 5.9
UNDERBODY VIEW OF FUEL TANK LEFT VIEW
PRE-TEST



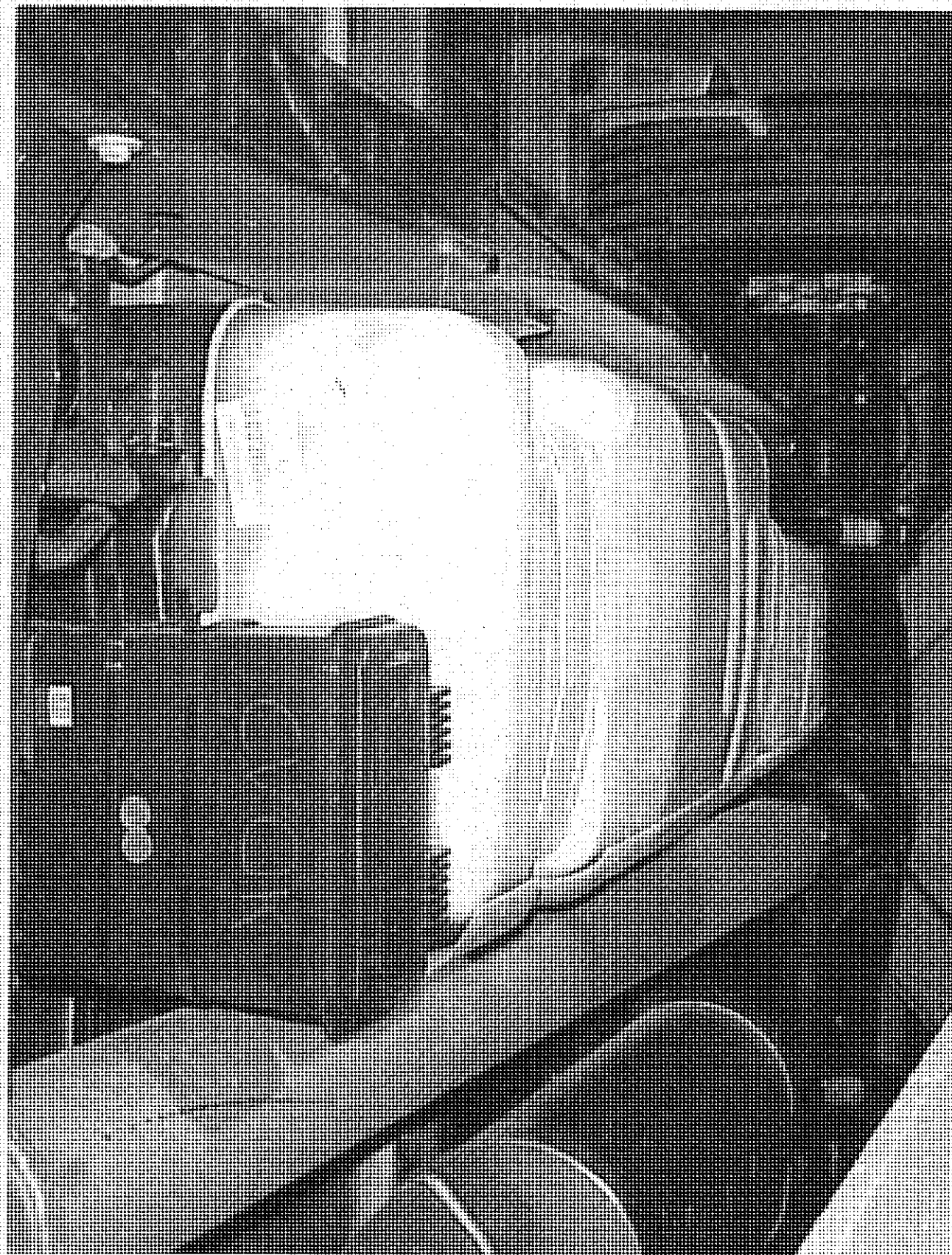
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.10
UNDERBODY VIEW OF FUEL TANK LEFT VIEW
PRE-TEST



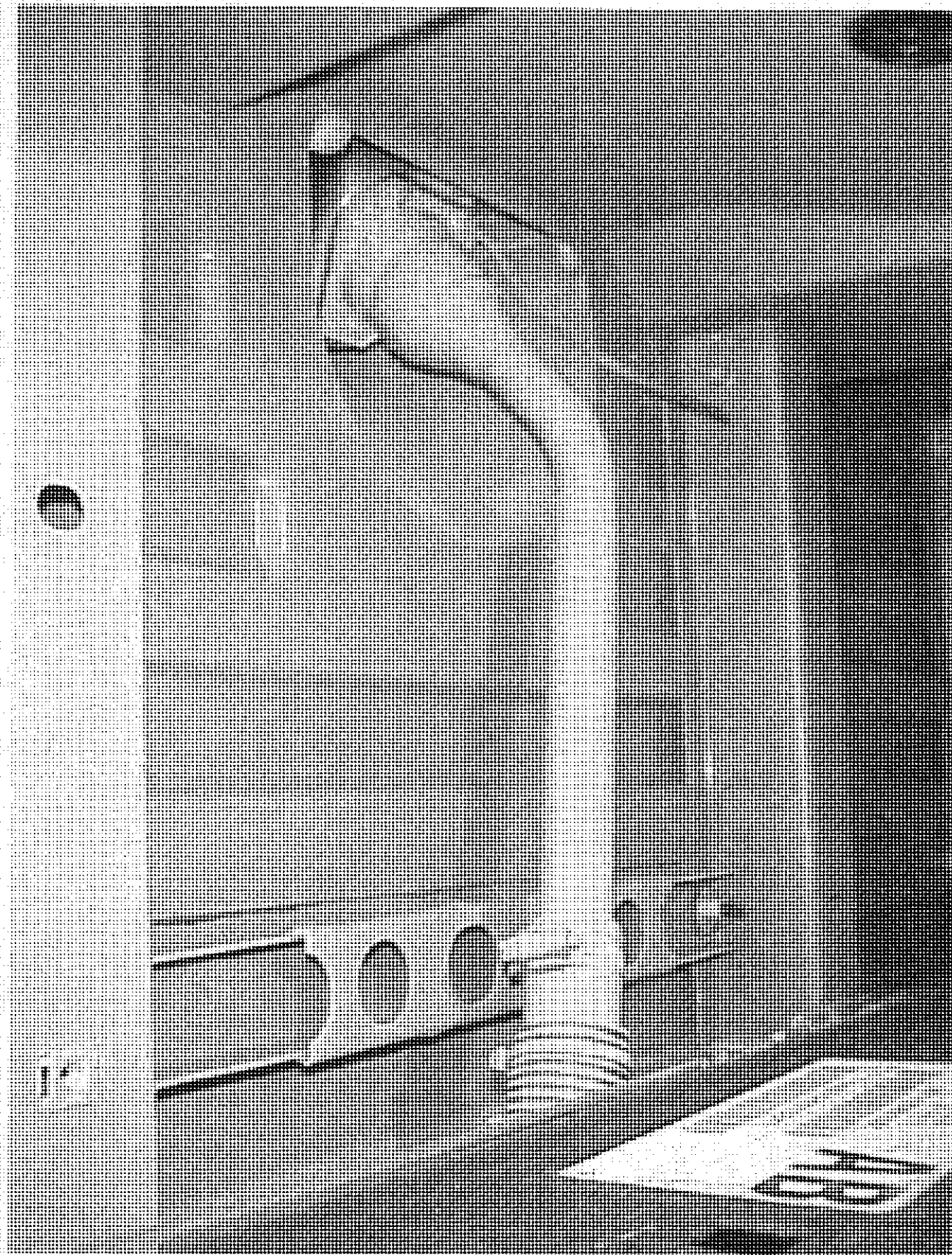
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.11
UNDERBODY VIEW OF FUEL TANK REAR VIEW
PRE-TEST



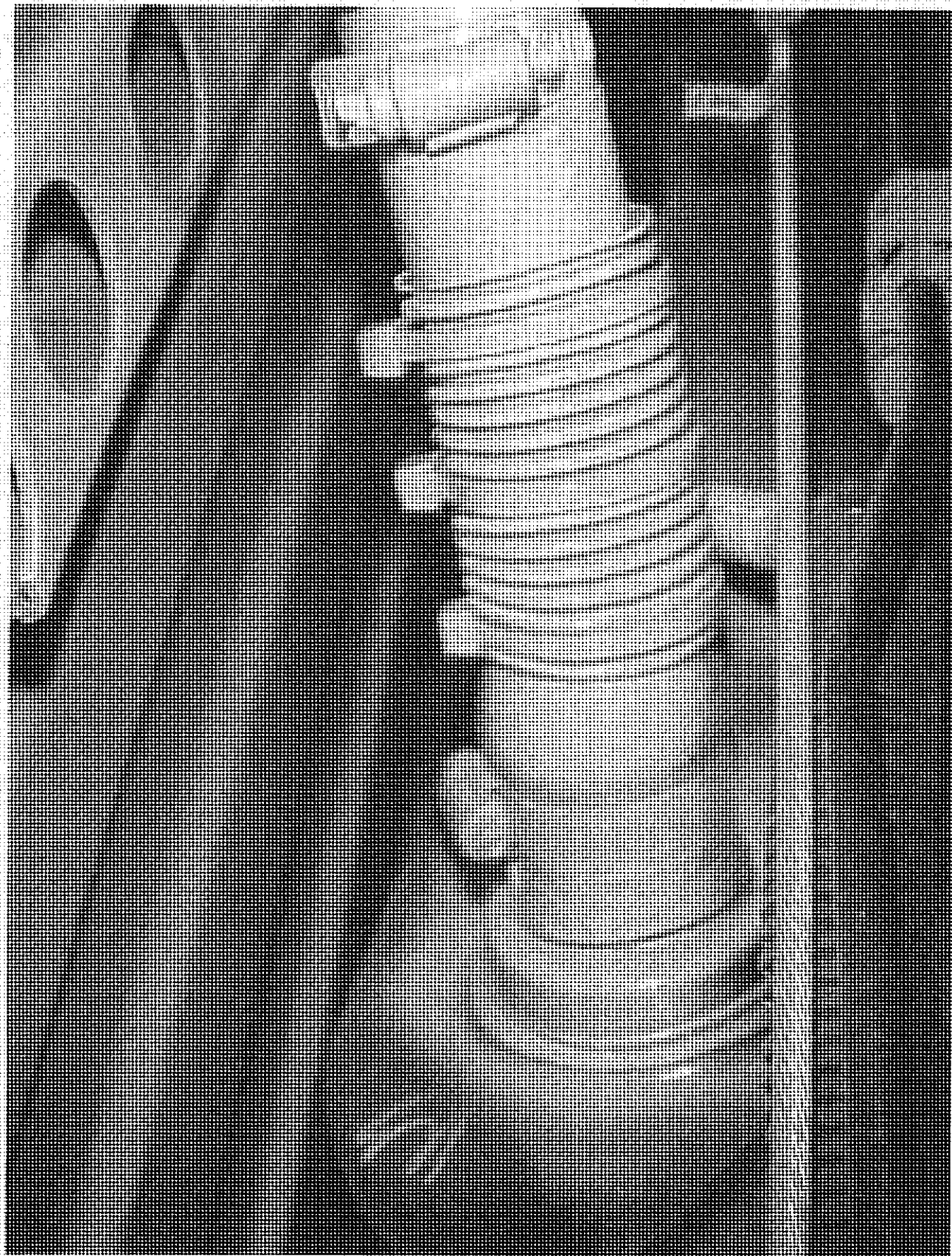
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.12
UNDERBODY VIEW OF FUEL TANK FRONT VIEW
PRE-TEST



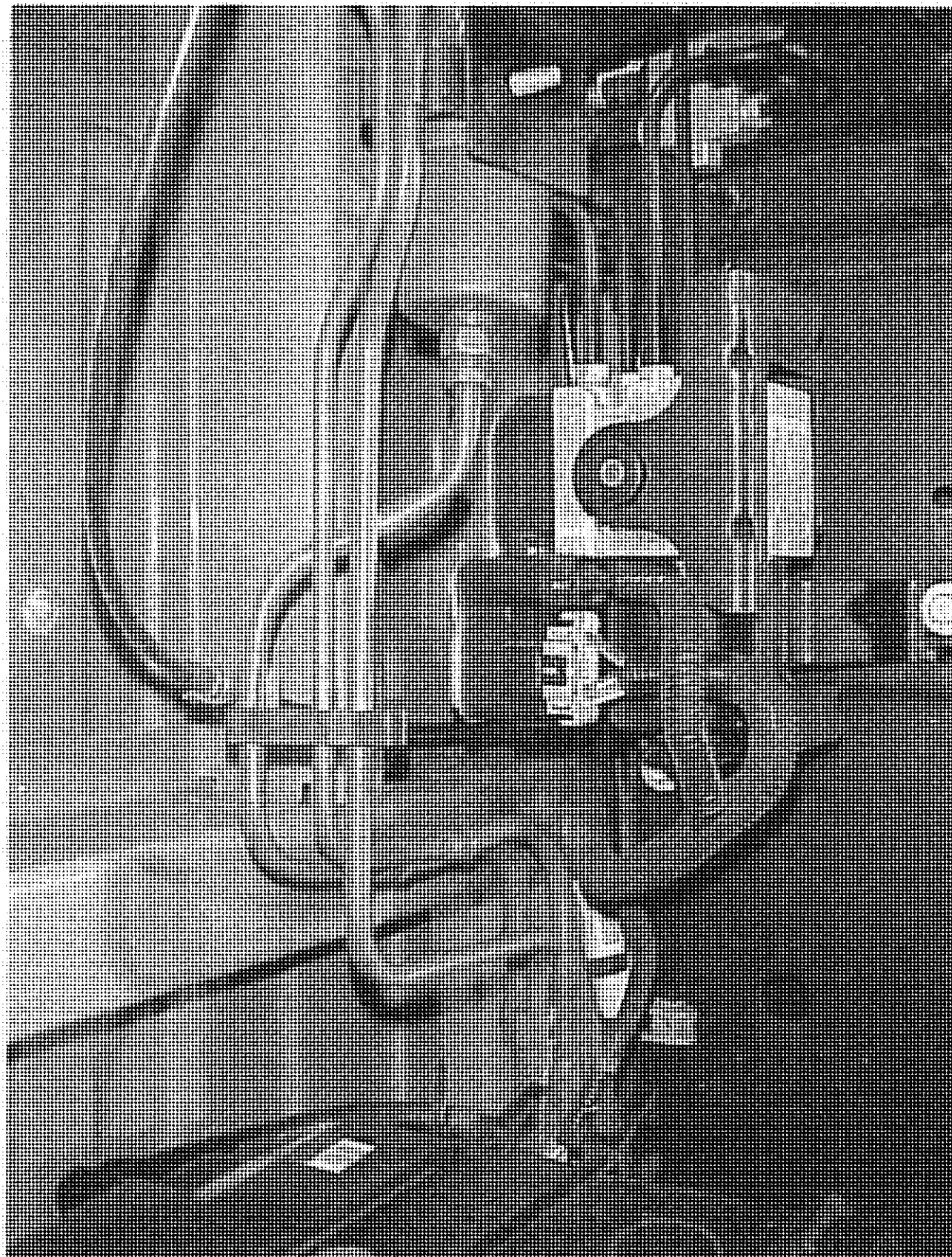
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.13
UNDERBODY VIEW OF FUEL FILL HOSE
PRE-TEST



2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 6.14
UNDERBODY VIEW OF FILL HOSE AT TANK
PRE-TEST



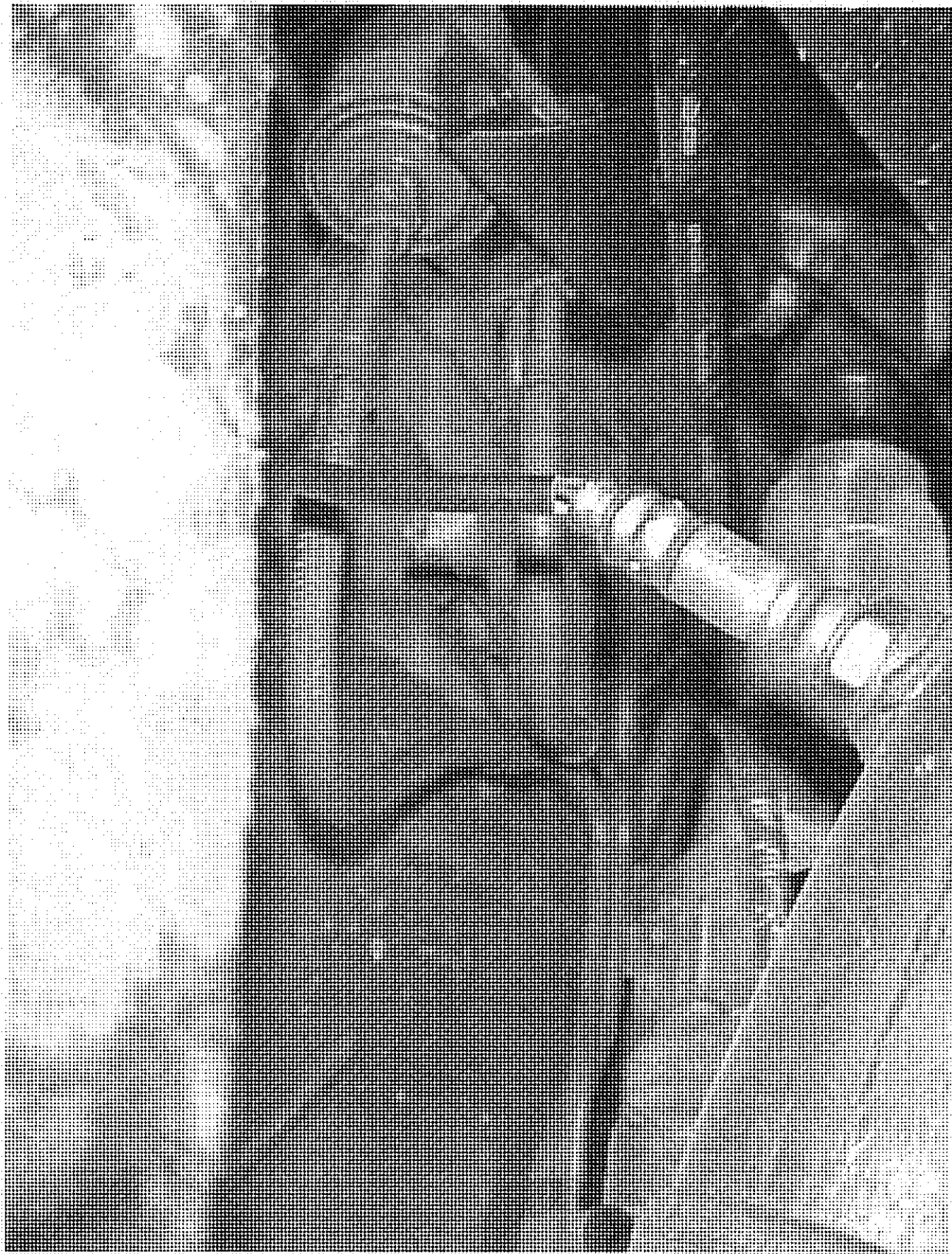
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FIGURE 5.15
UNDERBODY VIEW OF FUEL FILTER AND
LINES PRE-TEST



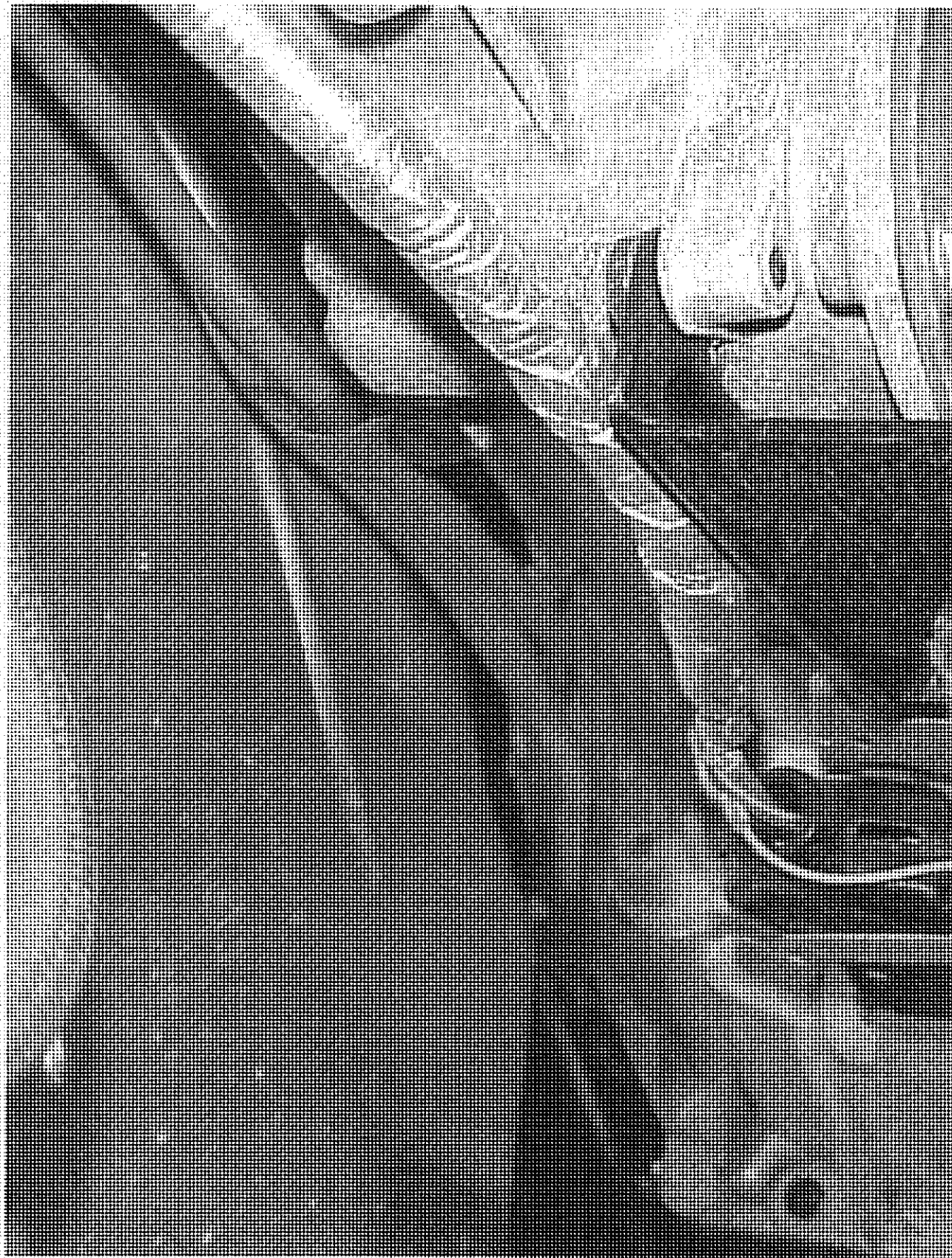
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NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.16
UNDERBODY VIEW OF FUEL LINES TO TANK
PRE-TEST



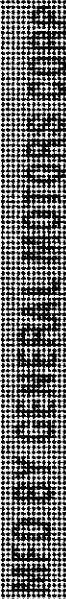
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FIGURE 5.17
UNDERBODY VIEW OF FUEL LINES IN CENTER
PRE-TEST



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FIGURE 5.18
UNDERBODY VIEW OF FUEL LINES TO ENGINE
PRE-TEST



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Figure 1

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 开户人: _____
 开户日期: _____
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 开户币种: _____
 开户金额: _____
 开户用途: _____
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 开户人盖章: _____
 开户日期: _____
 开户地点: _____
 开户币种: _____
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FIGURE 5.19
VEHICLE CERTIFICATION AND TIRE
INFORMATION LABEL

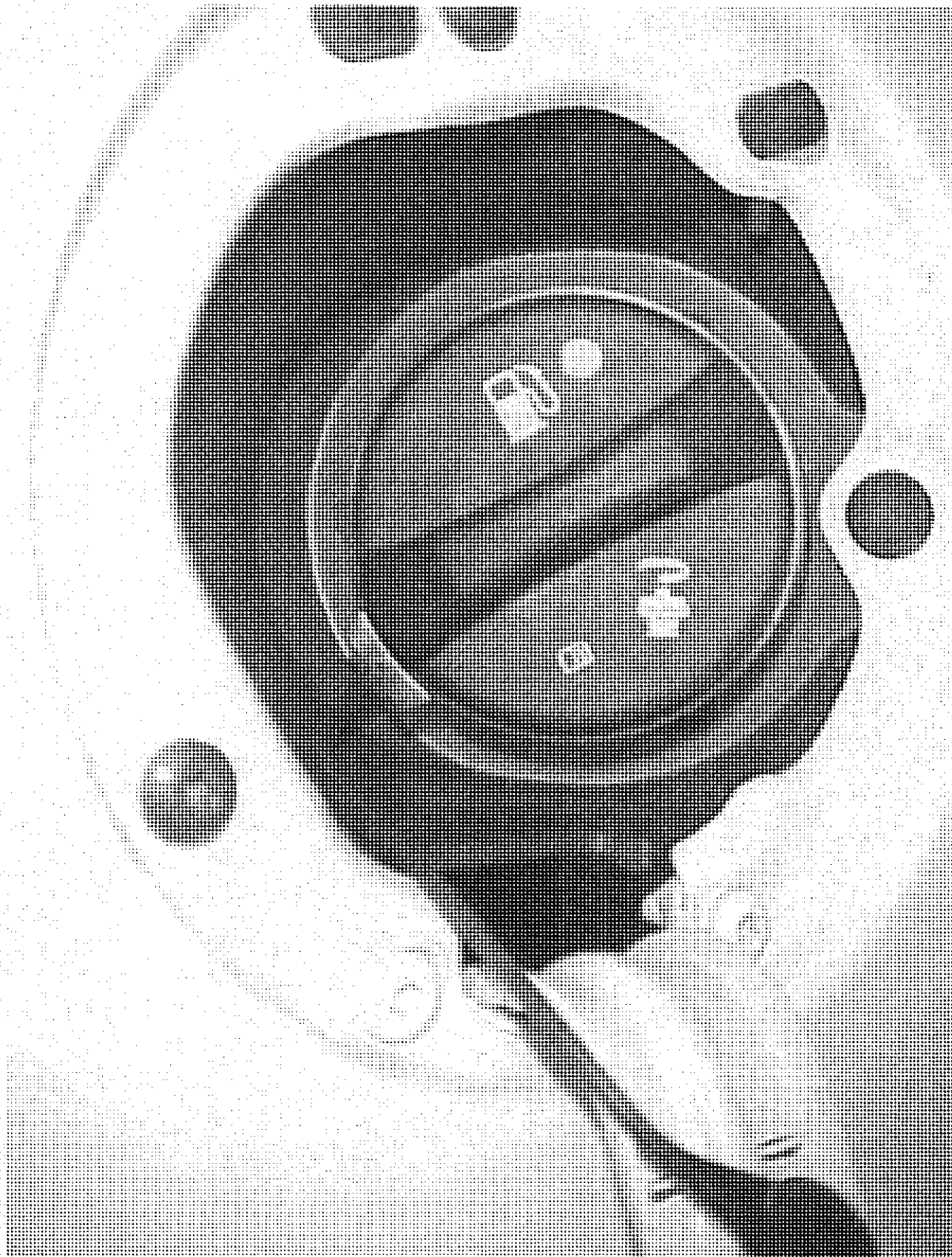


FIGURE 5.20
VEHICLE FUEL CAP PRE-TEST

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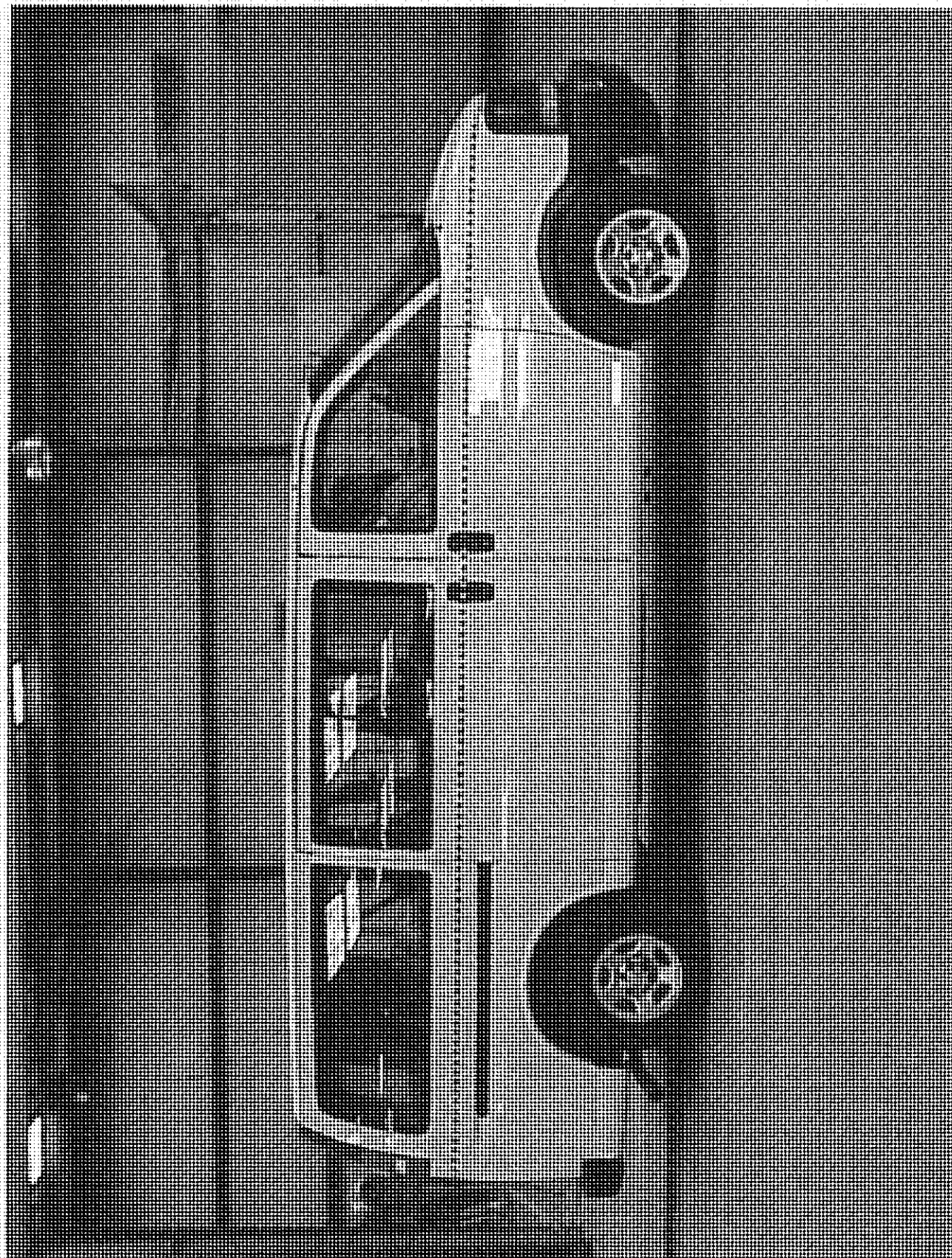
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FIGURE 5.21
FRONT VIEW OF VEHICLE POST TEST



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FIGURE 5.22
LEFT SIDE VIEW OF VEHICLE POST TEST



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FIGURE 5.23
RIGHT SIDE VIEW OF VEHICLE POST TEST

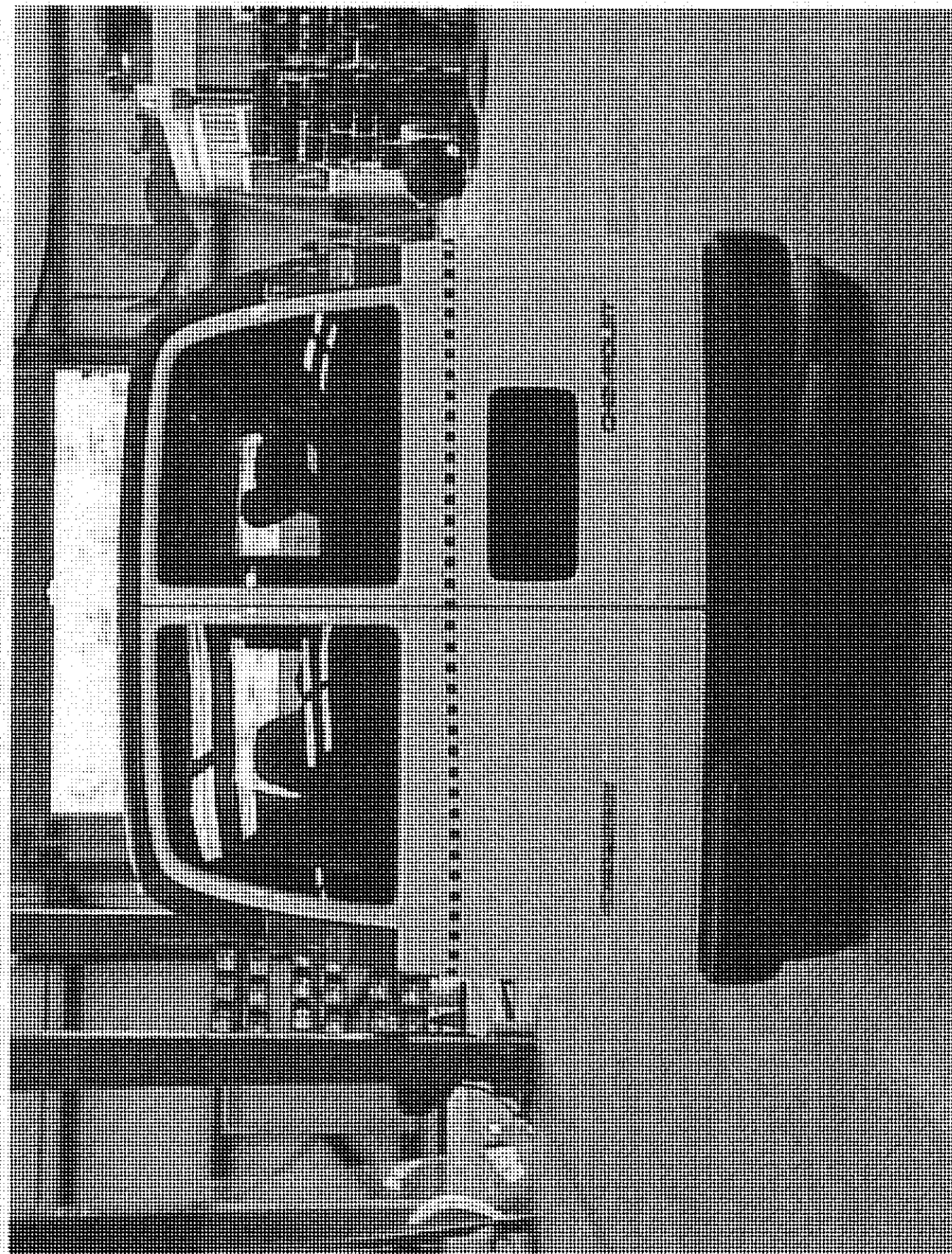
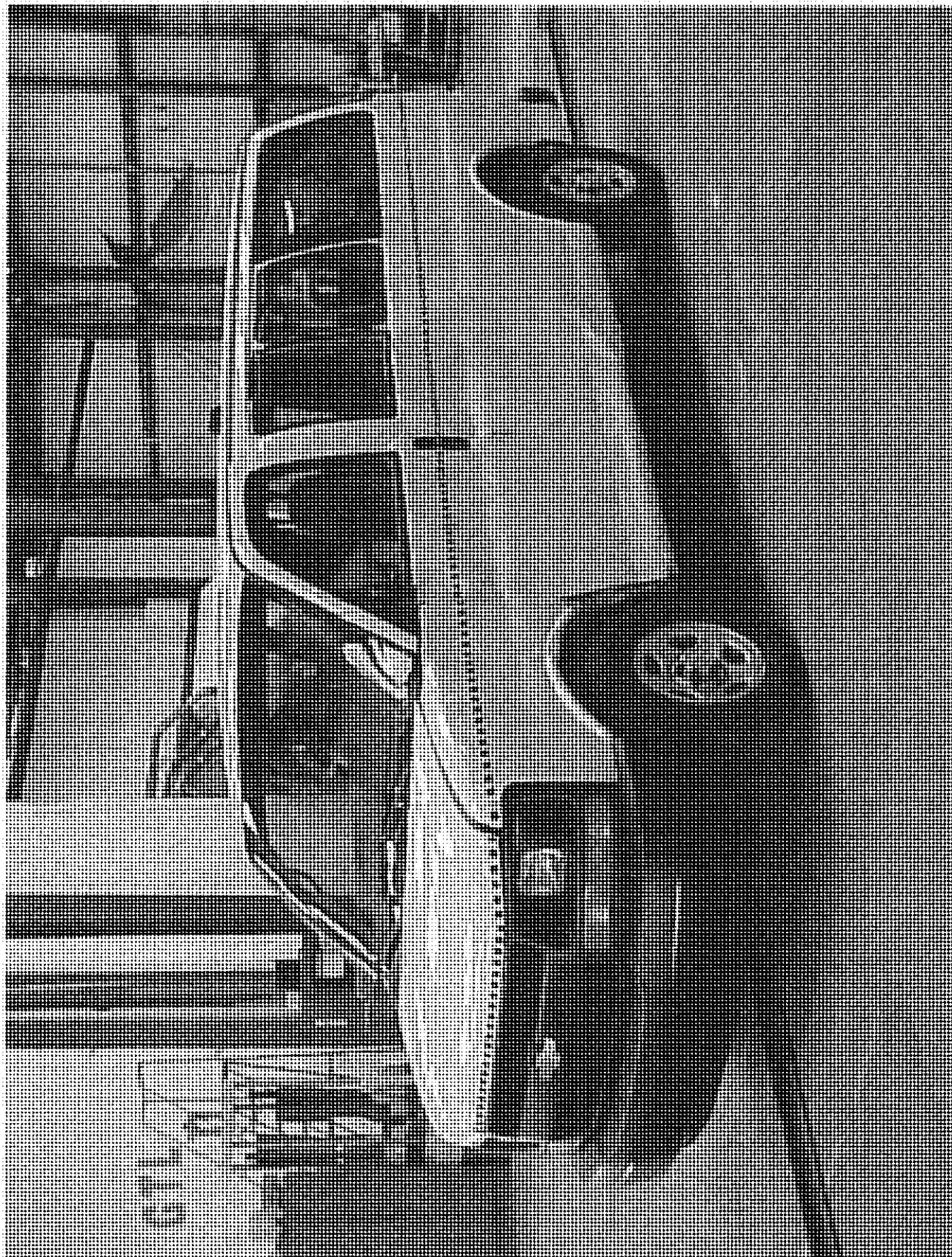


FIGURE 5.24
REAR VIEW OF VEHICLE POST TEST

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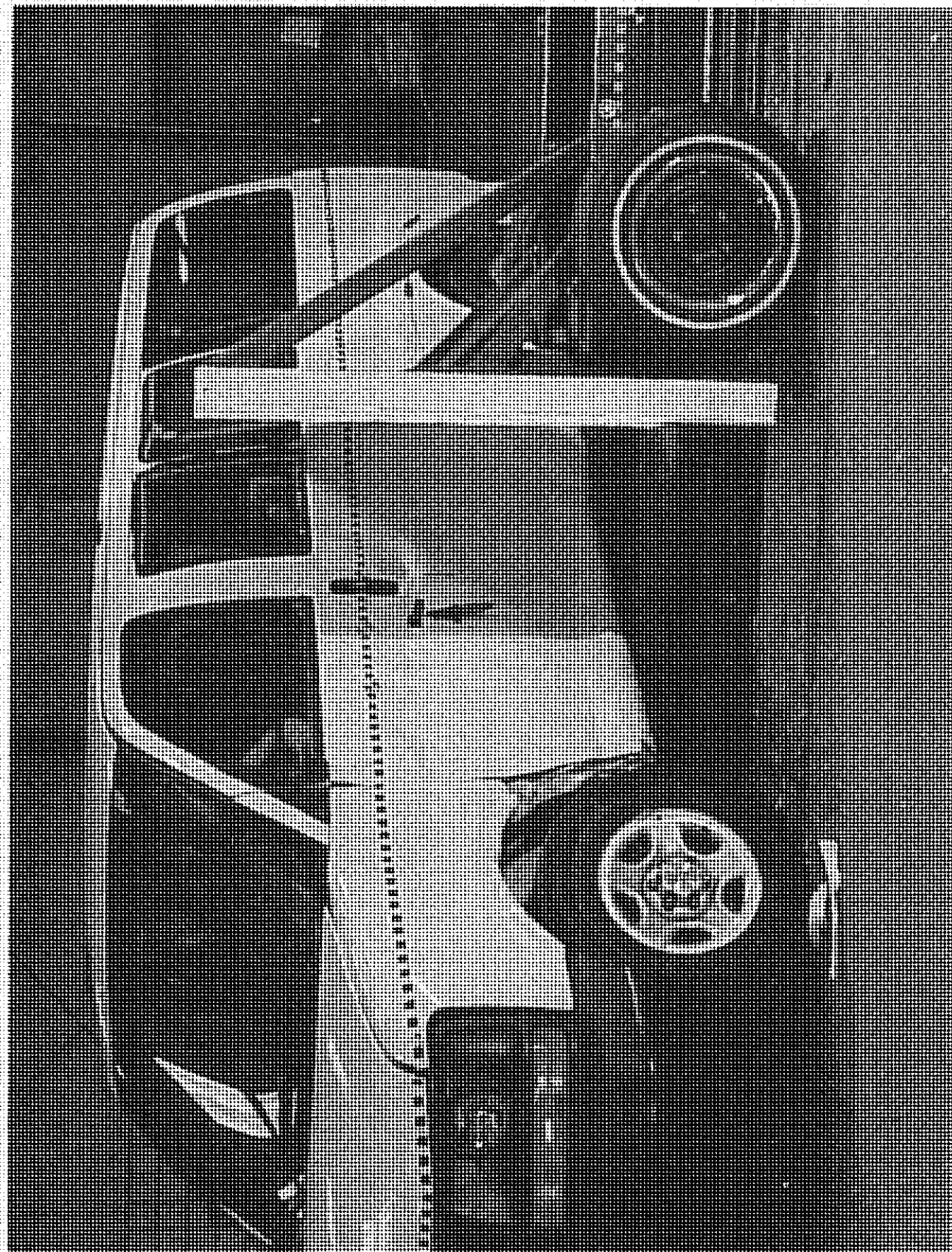
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FIGURE 5.25
¾ FRONTAL VIEW FROM LEFT SIDE OF
VEHICLE POST TEST



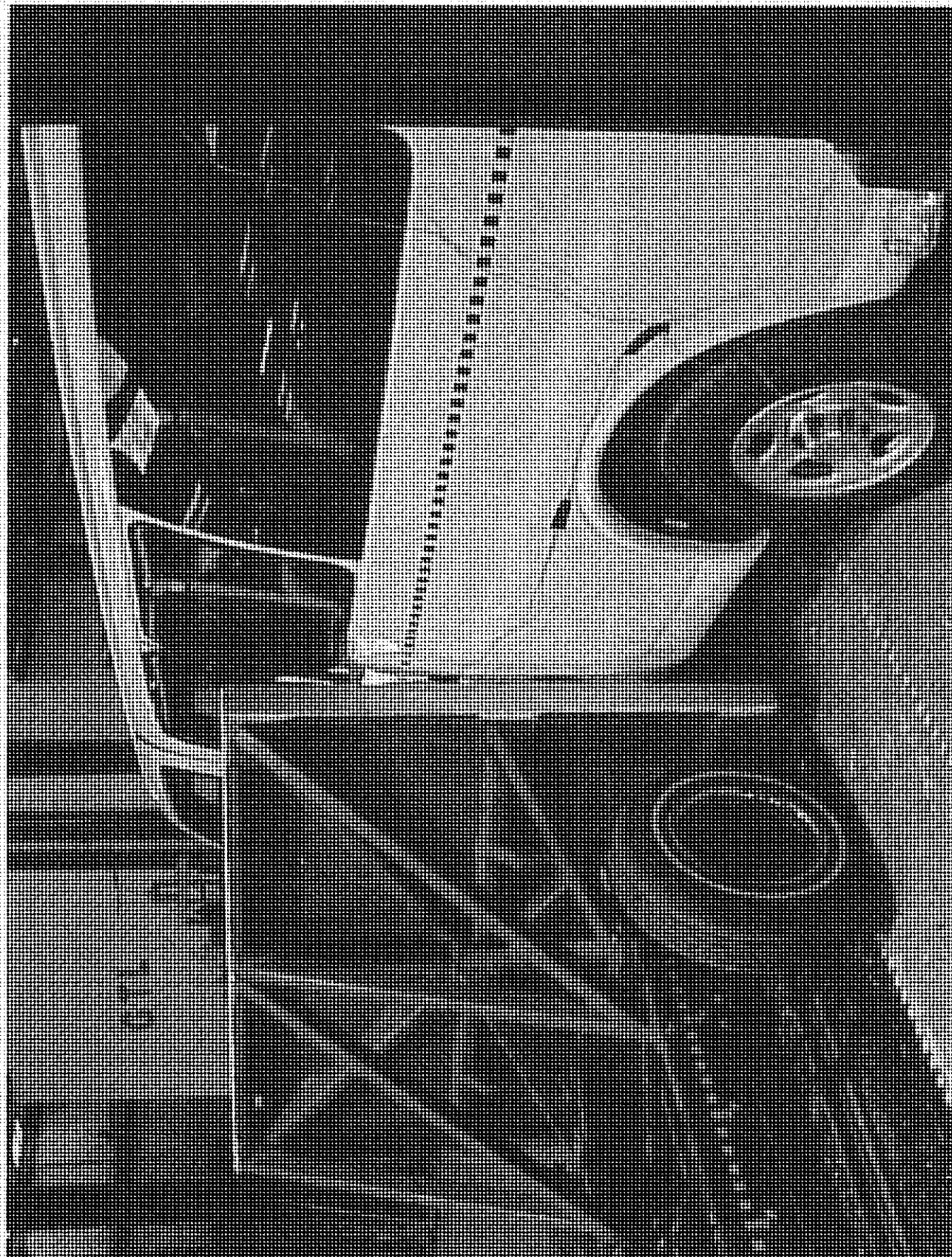
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
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FIGURE 5.26
¾ REAR VIEW FROM RIGHT SIDE OF VEHICLE
POST TEST



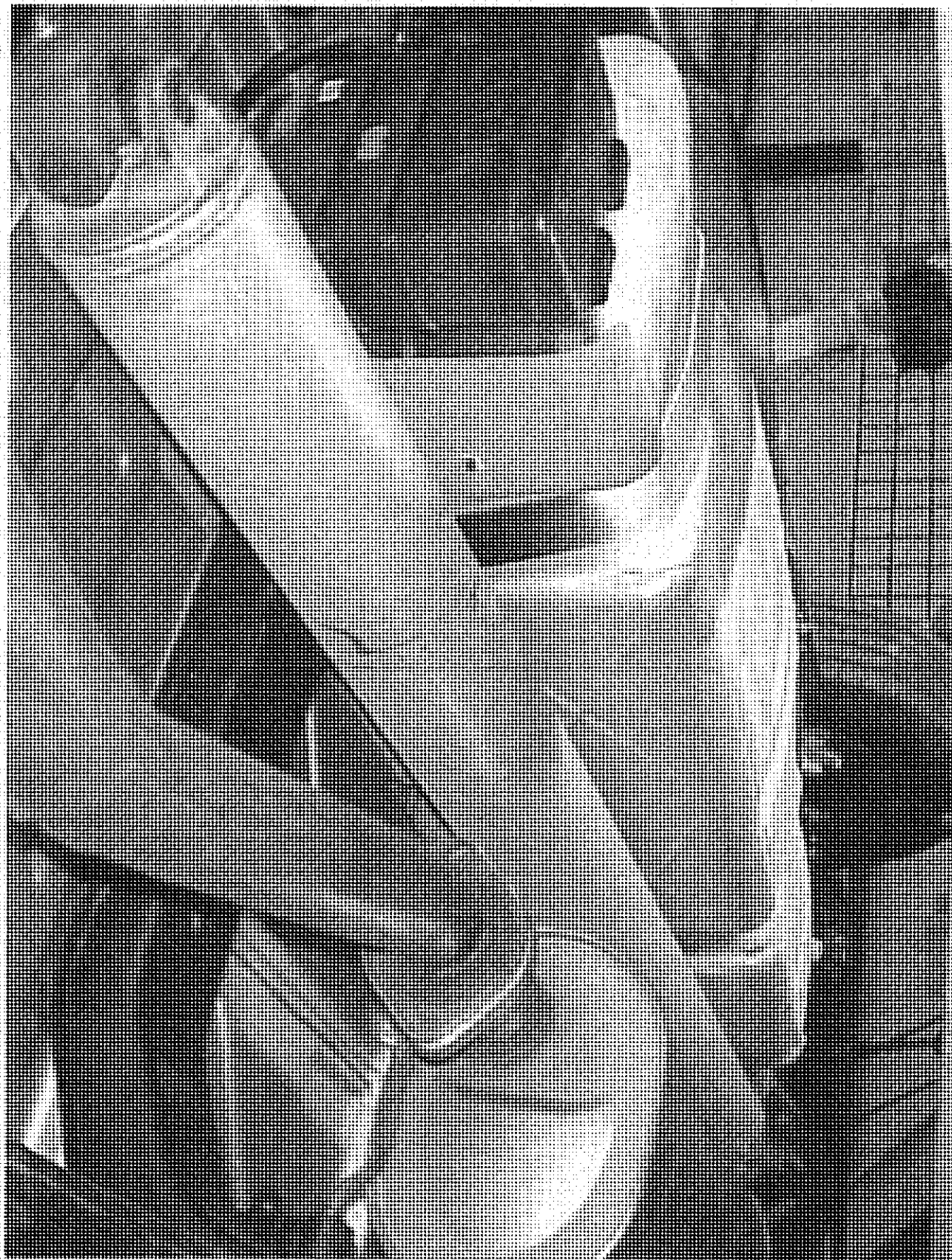
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NHTSA NO. C40111
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FIGURE 5.27
LEFT VIEW OF VEHICLE/BARRIER POST TEST



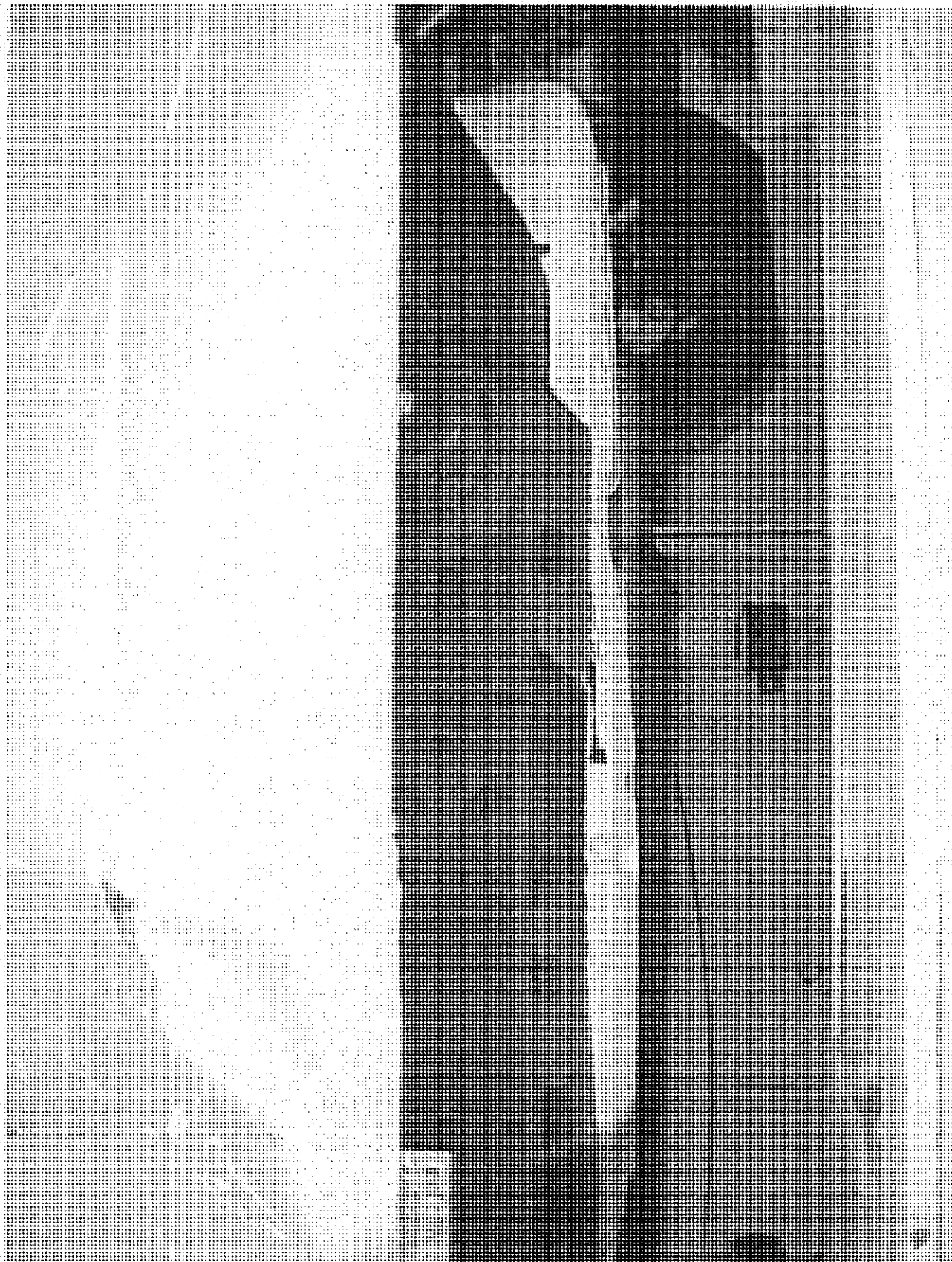
2004 CHEVROLET EXPRESS
NHTSA NO. C40111
FMVSS NO. 301L

FIGURE 5.28
RIGHT VIEW OF VEHICLE/BARRIER POST TEST



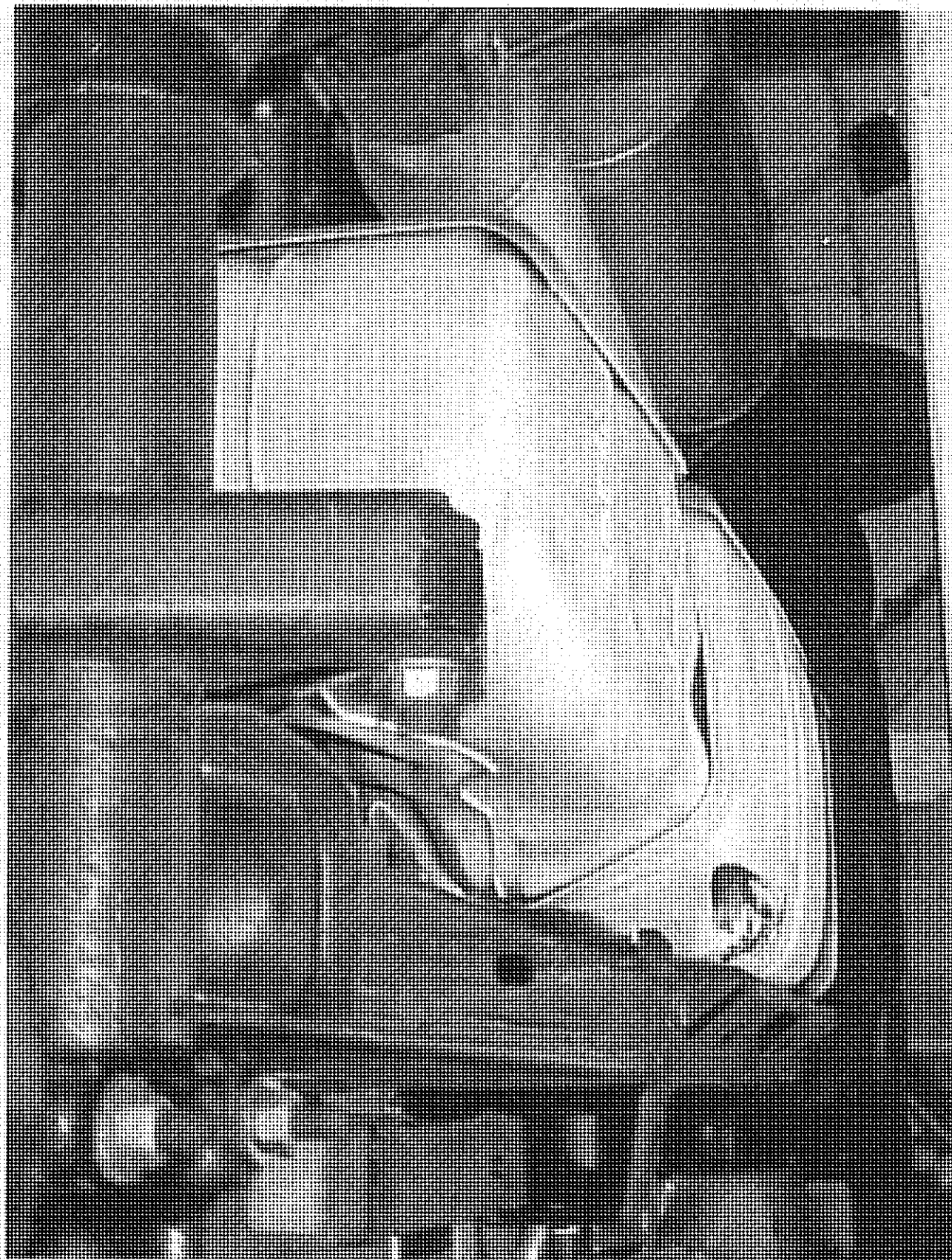
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FIGURE 5.29
UNDERBODY VIEW OF FUEL TANK RIGHT VIEW
POST TEST



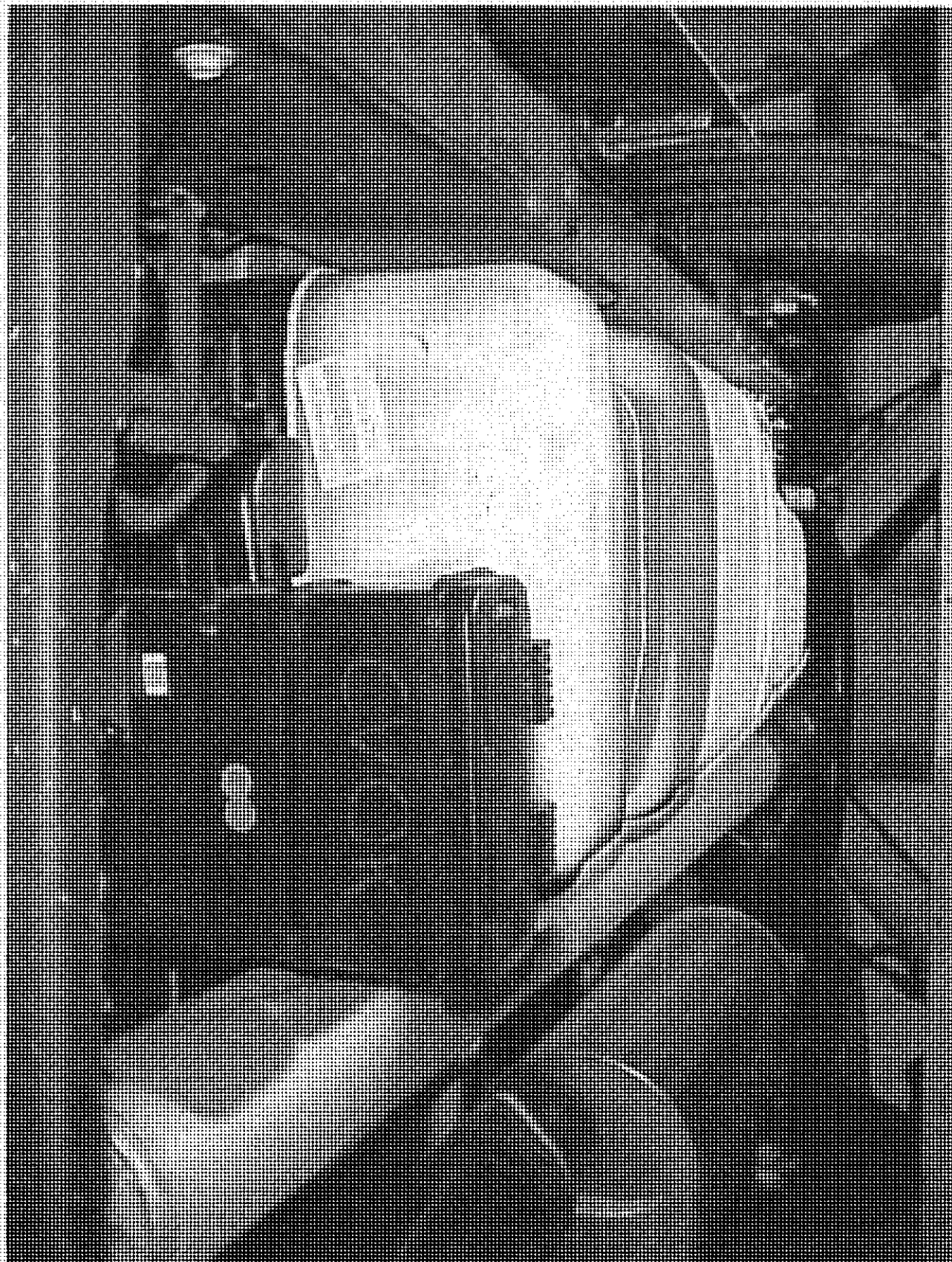
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FIGURE 5.30
UNDERBODY VIEW OF FUEL TANK LEFT VIEW
POST TEST



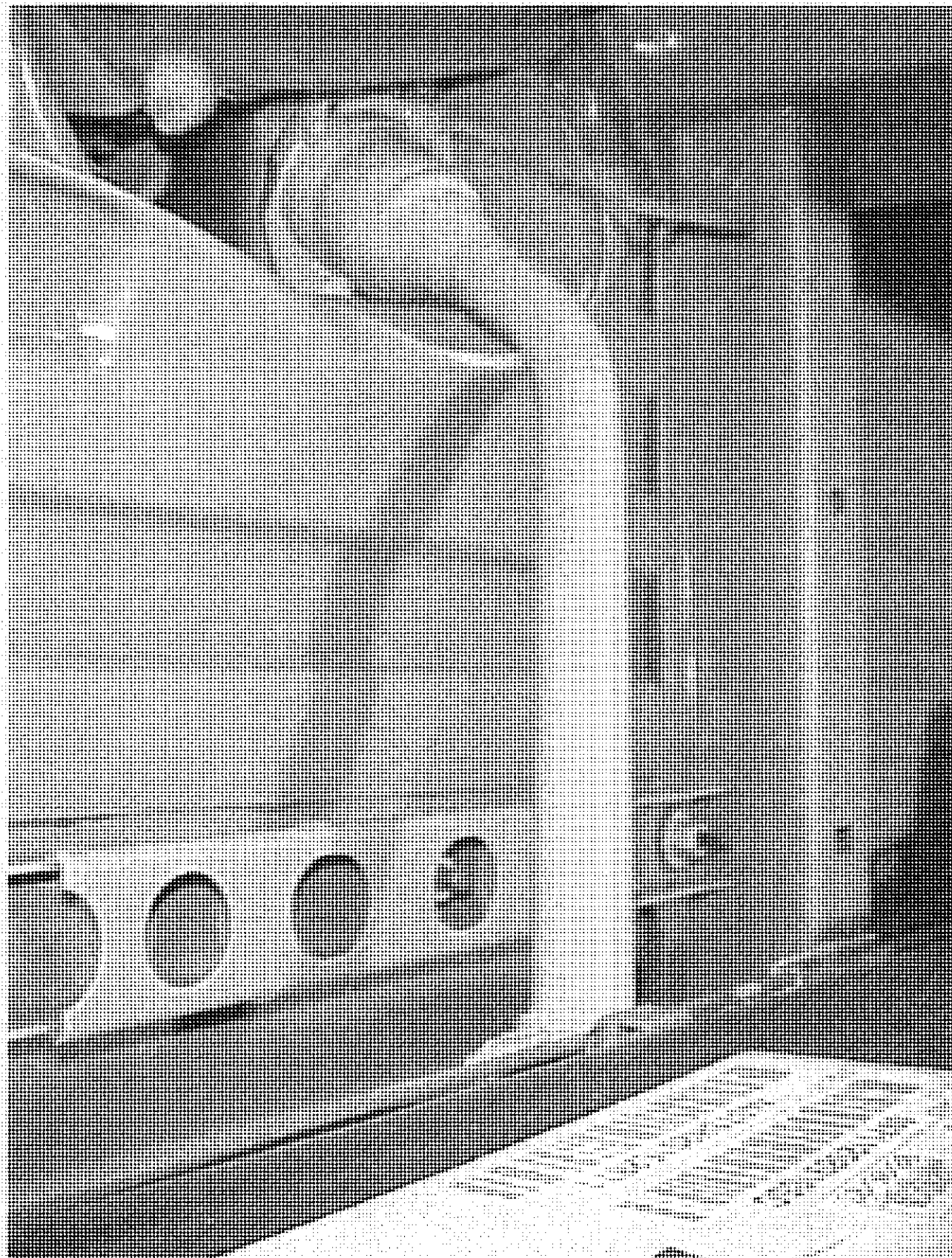
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FIGURE 5.31
UNDERBODY VIEW OF FUEL TANK REAR VIEW
POST TEST



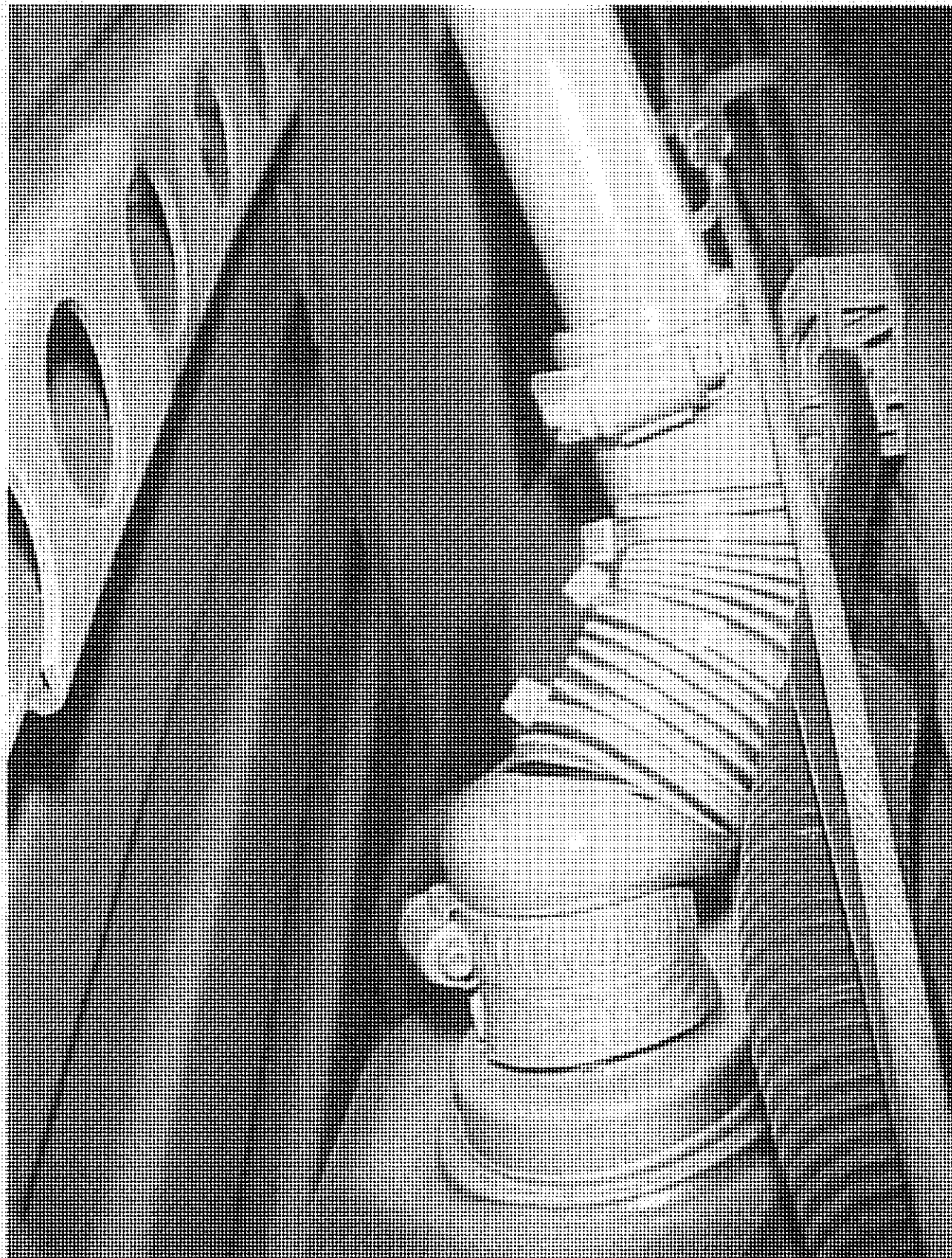
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FIGURE 5.32
UNDERBODY VIEW OF FUEL TANK FRONT VIEW
POST TEST



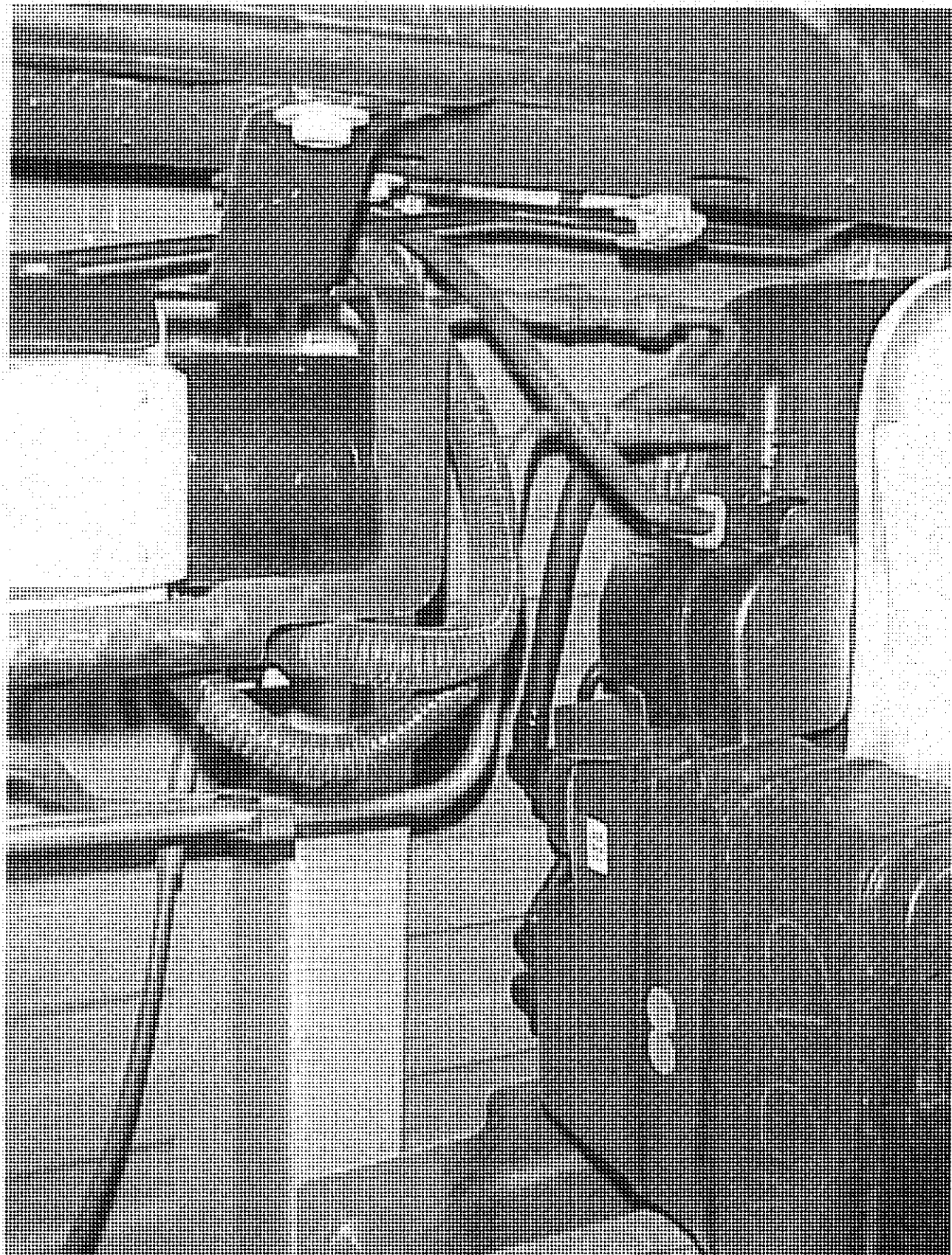
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FMVSS NO. 301L

FIGURE 5.33
UNDERBODY VIEW OF FUEL FILL HOSE POST
TEST



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FIGURE 5.34
UNDERBODY VIEW OF FUEL FILL HOSE AT
TANK POST TEST



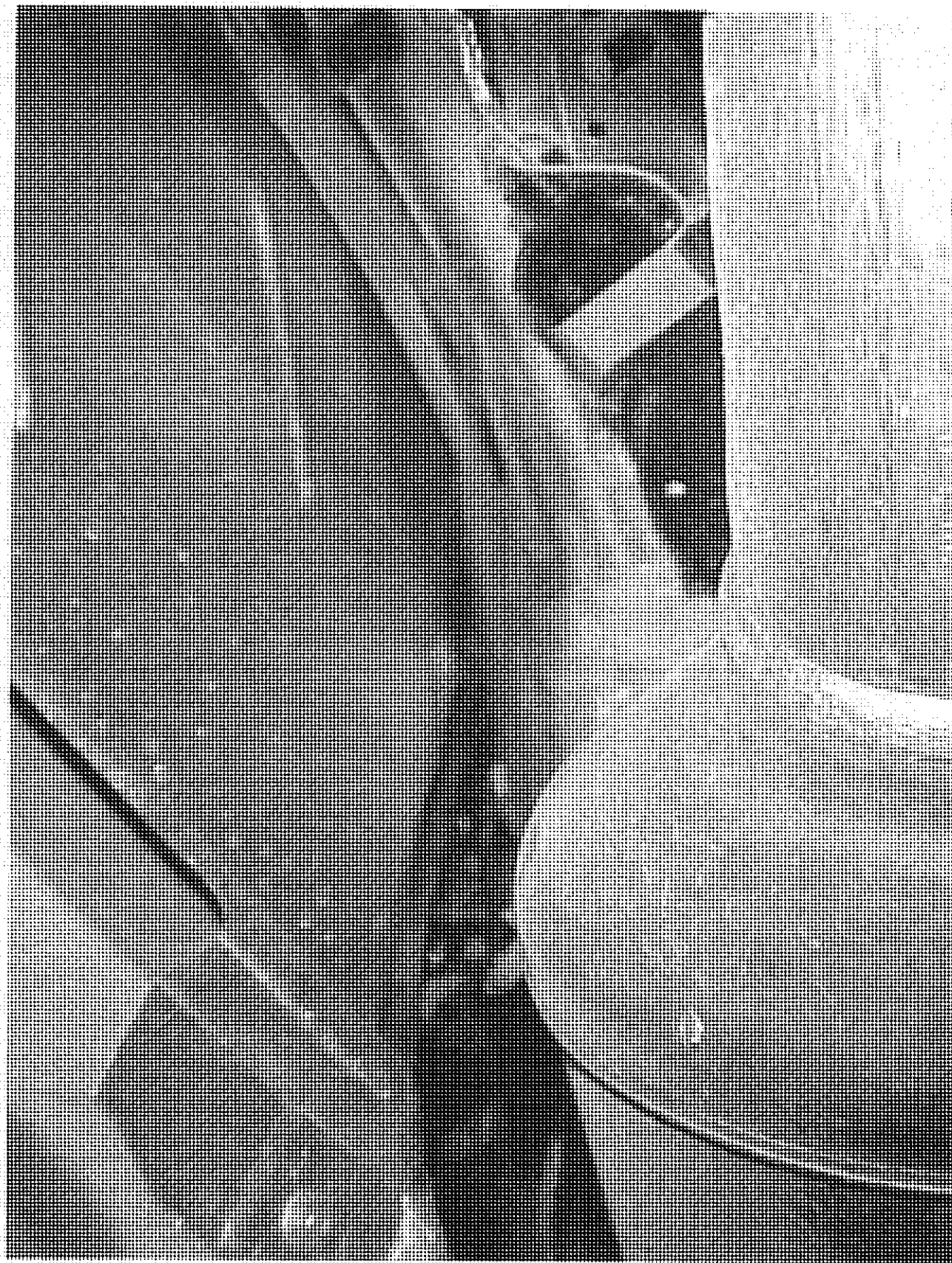
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FIGURE 5.35
UNDERBODY VIEW OF FUEL LINES TO TANK
POST TEST



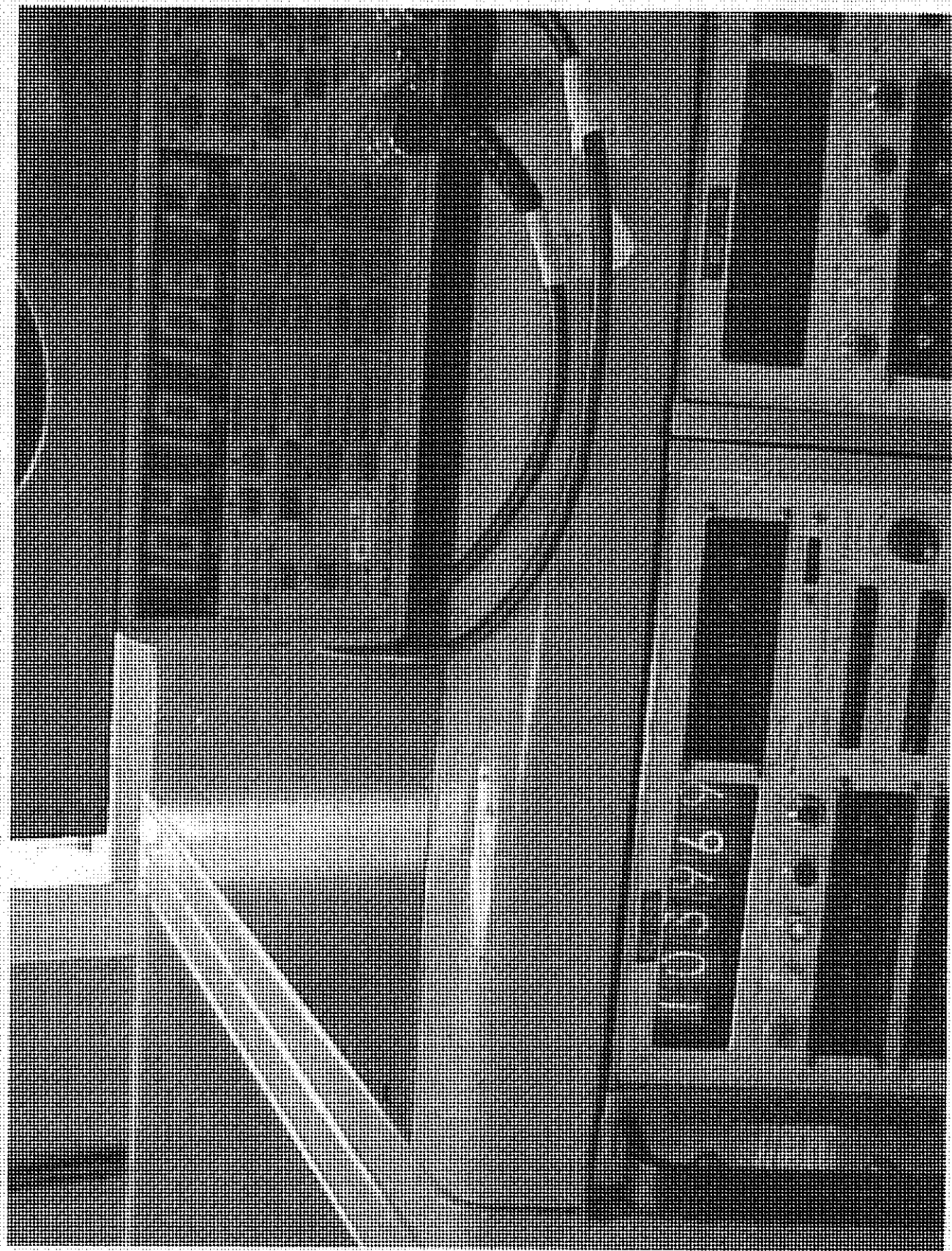
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FIGURE 5.36
UNDERBODY VIEW OF FUEL LINES IN CENTER
POST TEST



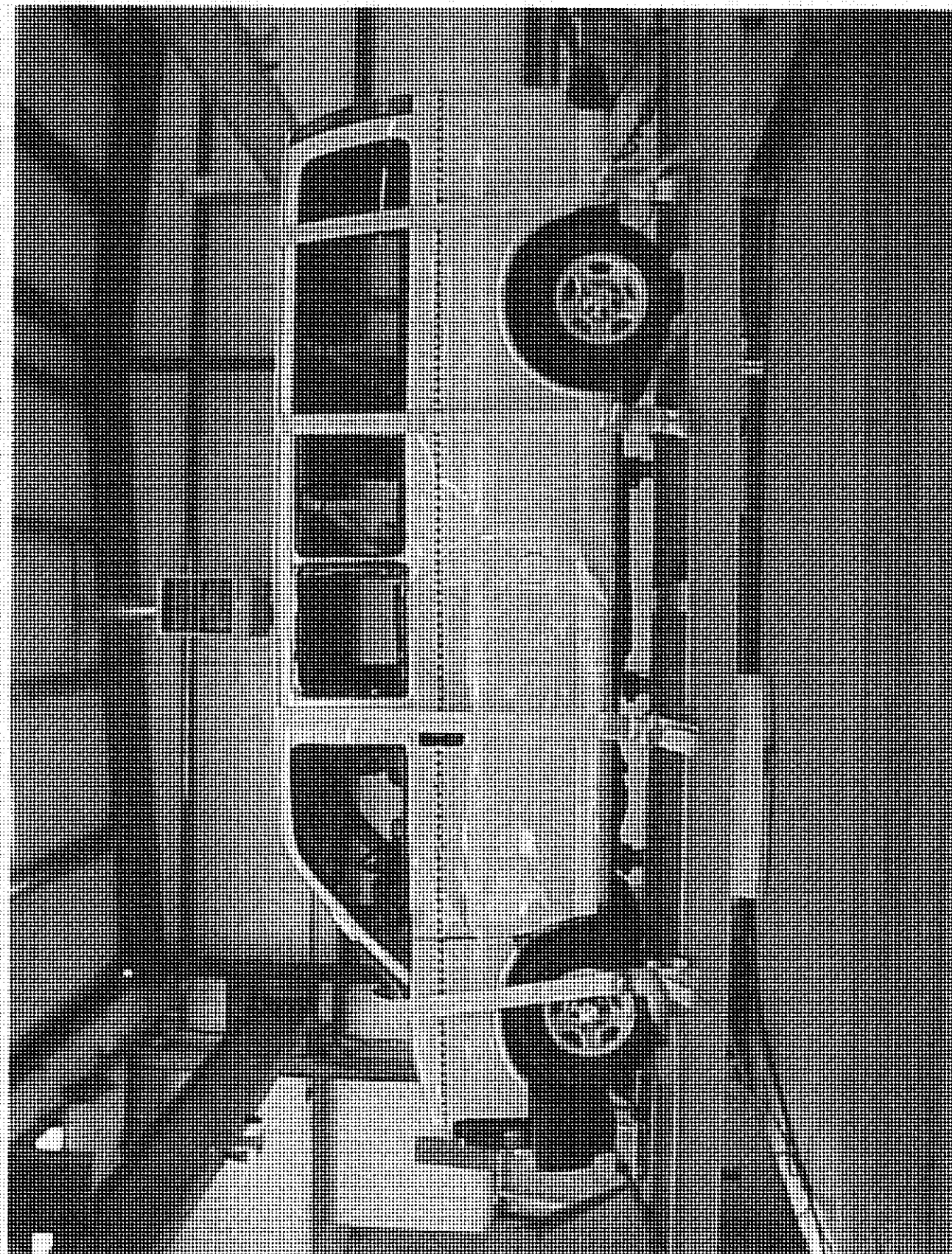
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FIGURE 5.37
UNDERBODY VIEW OF FUEL LINES TO ENGINE
POST TEST



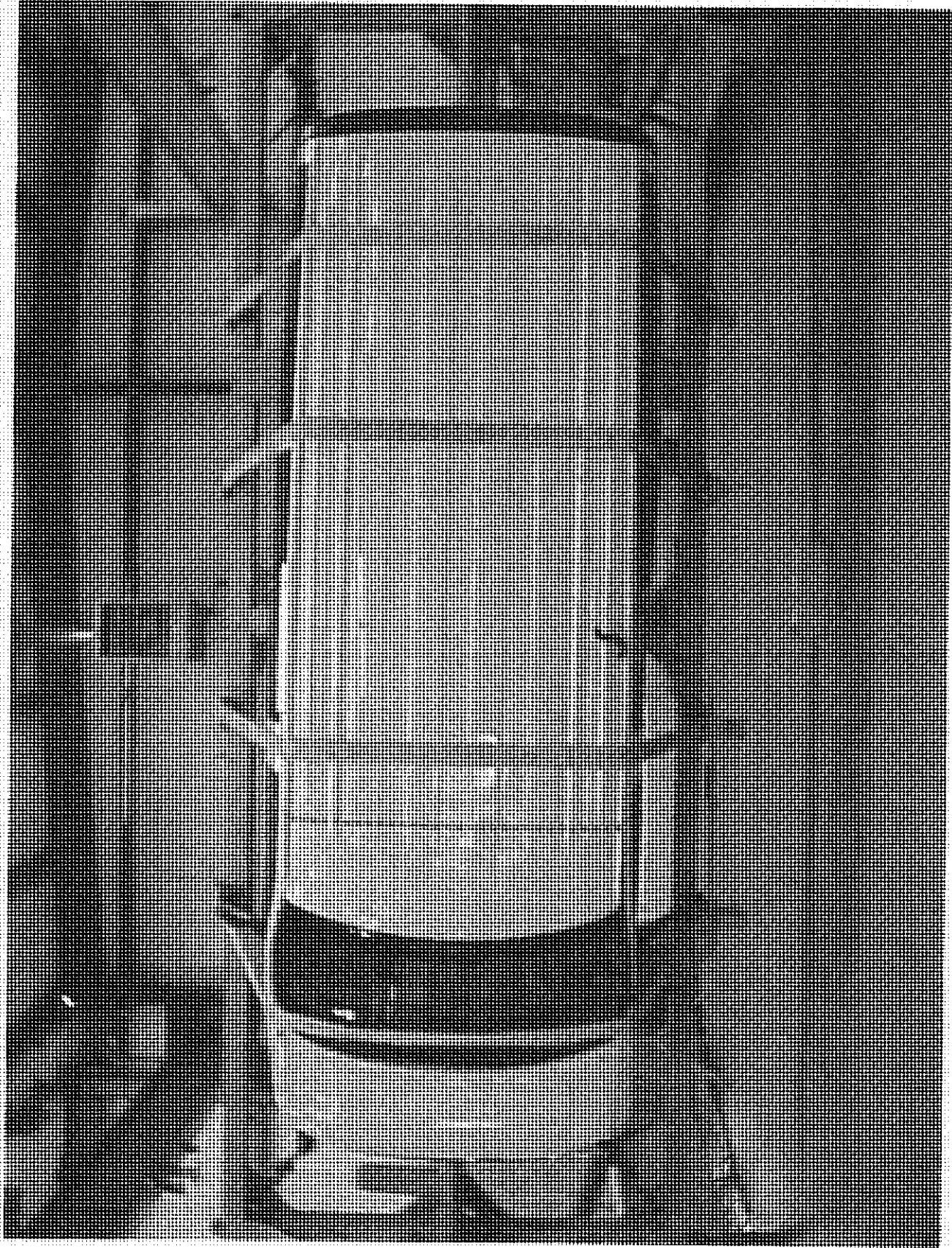
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FIGURE 5.38
SPEED COUNTERS POST TEST



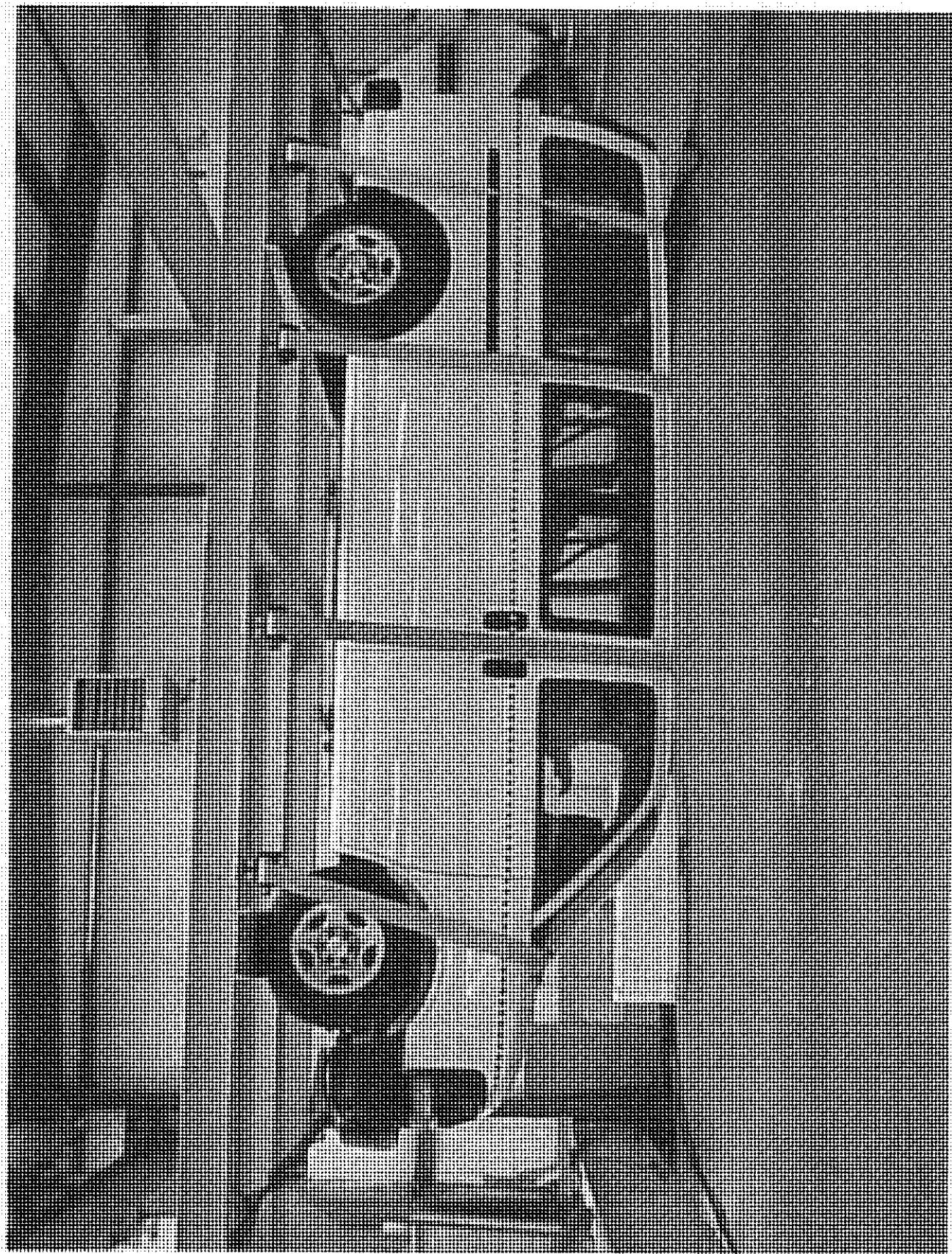
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FIGURE 5.39
VEHICLE IN ROLLOVER FIXTURE AT 0°



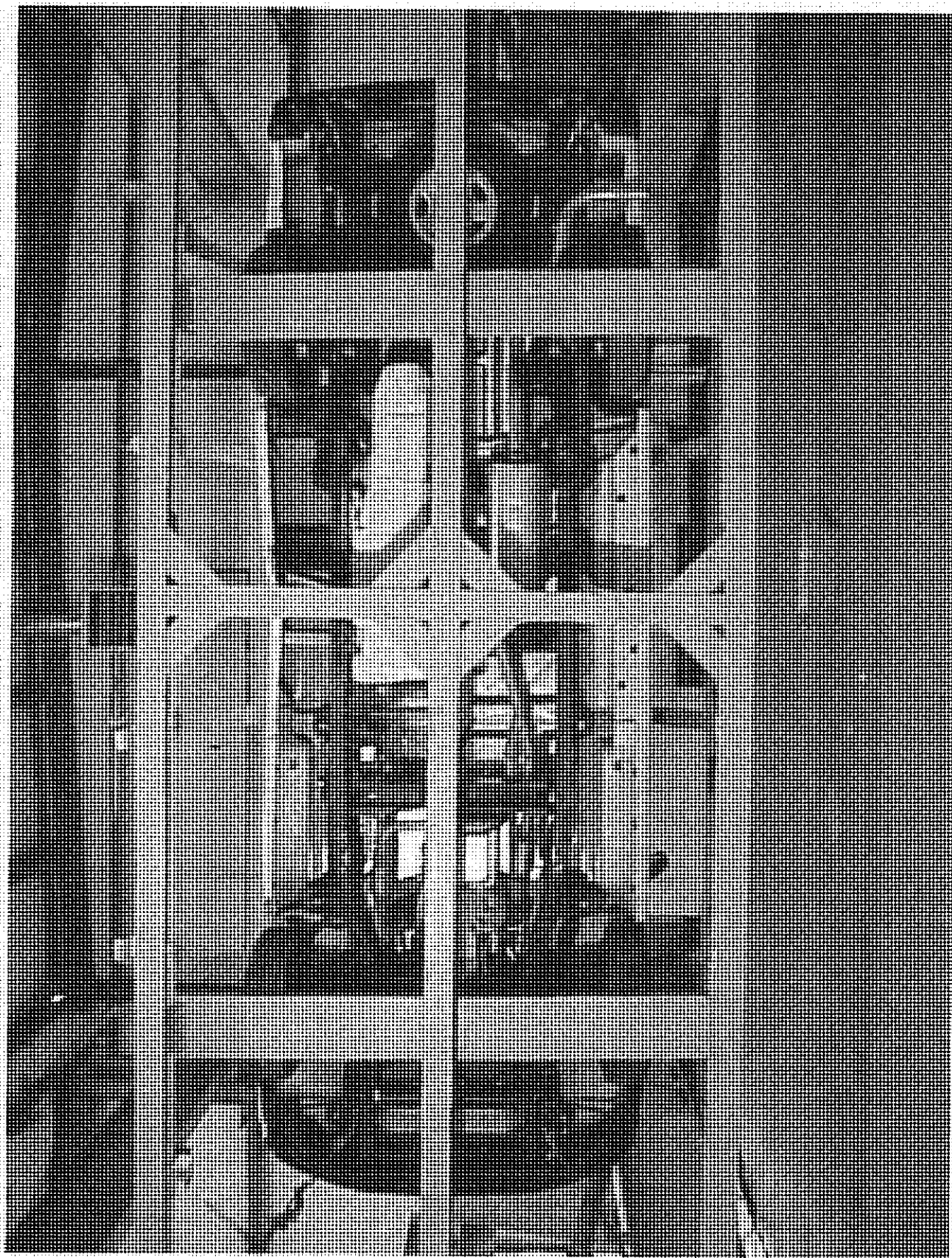
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FIGURE 5.40
VEHICLE IN ROLLOVER FIXTURE AT 90°



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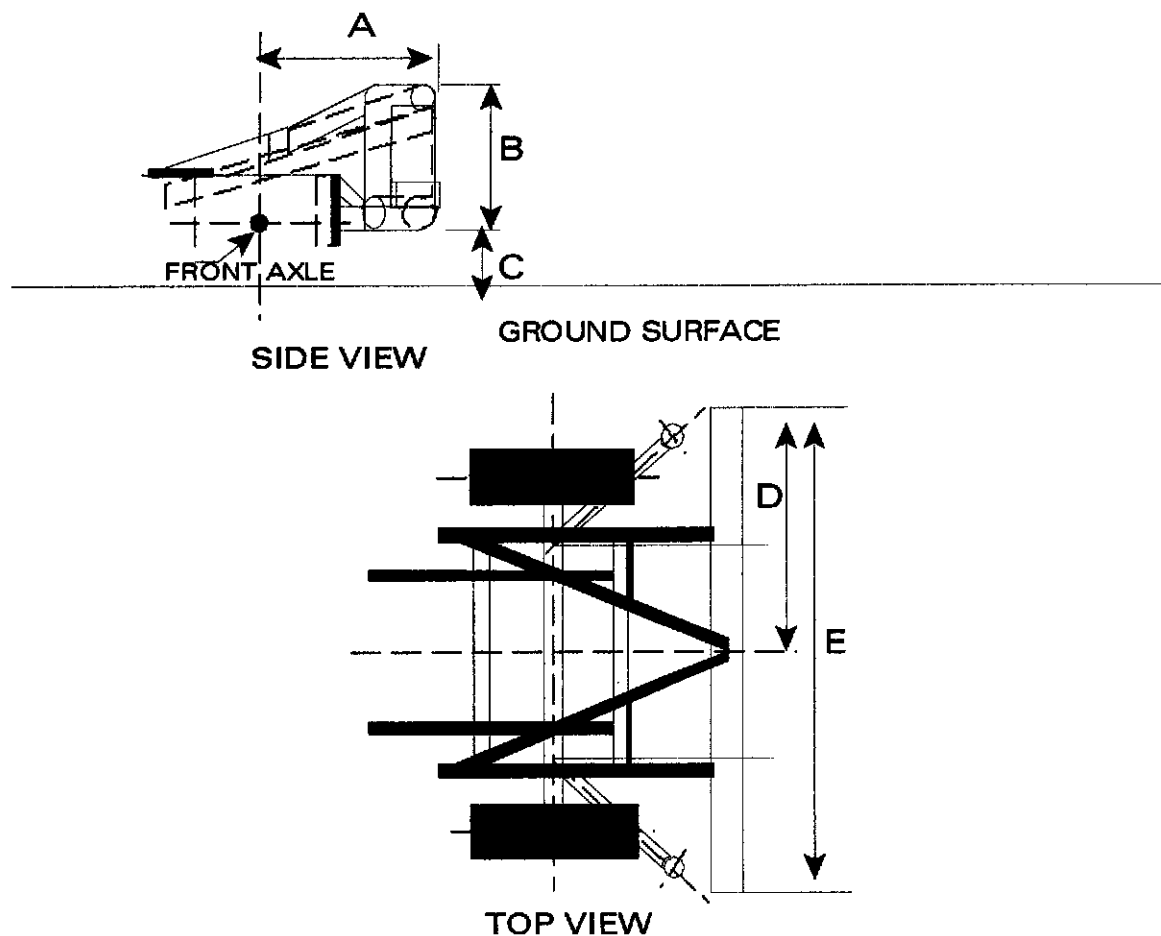
FIGURE 5.41
VEHICLE IN ROLLOVER FIXTURE AT 180°



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FIGURE 5.42
VEHICLE IN ROLLOVER FIXTURE AT 270°

SECTION 6
BARRIER INFORMATION



DIMENSIONS SHOWN IN TABLE ON NEXT PAGE

NOTES:

- 1.Face Plate 0.50 in. (19mm) thick cold rolled steel
- 2.All Inner Reinforcements 4.0 x 2.0 x 0.19 in. (102 x 51 x 5mm) Steel Tubing
- 3.Impact Surface above shown without .75 x 48 x 96 in. Plywood Face attached

LETTER	INCHES	MILLIMETERS
A	20.5*	521*
B	60.0	1524
C	5.0	127
D	39.0	991
E	78.0	198

TEST SET-UP OF COMMON CARRIAGE WITH 60" x 78" FLAT FACE IMPACT SURFACE INSTALLED:

LEFT FRONT WEIGHT	<u>1075</u>
RIGHT FRONT WEIGHT	<u>1075</u>
LEFT REAR WEIGHT	<u>887</u>
RIGHT REAR WEIGHT	<u>887</u>

TOTAL WEIGHT 3924

* EXCLUDING 3/4" PLYWOOD FACE

DIMENSIONS FOR GTL 60" x 78" FLAT FACE IMPACT SURFACE